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THE AMERICAN TELEPHONE JOURNAL

Comprising Telephony, American Telephone Journal, Telephone Weekly, Telephone Magazine, Telephone Securities, The Telephone and Sound Waves

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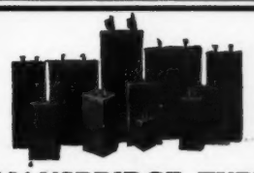

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ARGUMENT FOR "IDEAL" TELEPHONE SERVICE VS. "UNIVERSAL" SERVICE

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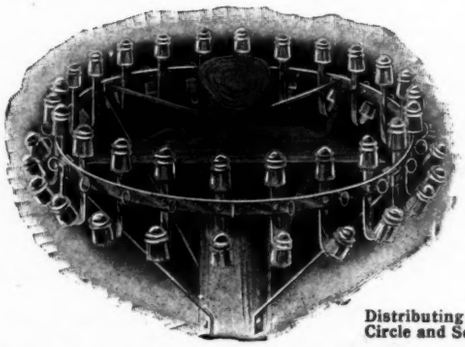

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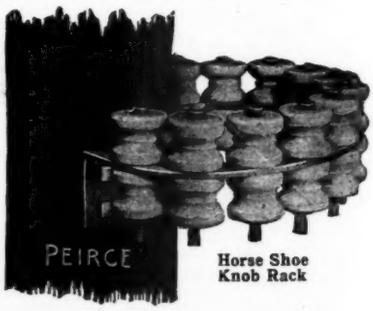

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The Telephone as a Business.

Elsewhere in this issue will be found an account of the reported impending action of the United States government against the American Telephone & Telegraph Co. and its allied companies, under the Sherman anti-trust law. While no confirmation can be obtained of the rumor, which was given currency this week by an Associated Press dispatch, there is evidence of truth in the story. Additional color is given by the fact, generally known, that the Department of Justice has been engaged for some months in an investigation of the affairs of the Bell system, with particular reference to its relations with competing telephone companies. We may fairly assume, therefore, that there is strong probability of the institution of such a suit against the Bell.

It is also fair to assume, in view of all the conditions in the telephone field, that action of this nature should be welcomed by Independents and Bell alike. There is no doubt whatever that a thorough probing of the telephone situation generally will have a pronounced tonic effect upon the entire industry. It will clear the air to a remarkable degree; it will define precisely what may and what may not be done in the evolution of the business; it will conclusively establish its status; it will tend to conserve the interests of the operator and the investor alike; it will finally eliminate all traces of uncertainty which have hampered the legitimate growth and have interfered with the natural development of the business.

There is no valid reason why so great a business, such as this, supplying an absolute necessity of commercial and social life, should be subject to the slightest fluctuation or uncertainty. True, among the Independent companies there has been very little of this; it has mainly characterized the activities of the Bell system. And none have, we believe, been more concerned over this condition than the officials of that system themselves. The establishment of an exact legal status for the Bell organization would not only iron out some of its innumerable wrinkles; it would give a tone to the telephone business everywhere that would mean much.

We fail sometimes to appreciate the immensity and importance of the industry in which we are engaged. Statistics, as recently reported in this paper, show that, in one year (1911) twenty-two billion telephone calls were made throughout the world. Of these the United States had something over fourteen billion, or about 66 per cent. The total investment in telephones is approximately two billion dollars.

Here is no infant industry, but a lusty young giant. Here is a business, tremendously profitable and stable, whether in good times or bad, which should have its status determined and its methods codified. The government investigation, therefore, whatever its outcome, will undoubtedly be welcomed by every telephone man, regardless of his affiliations.

Telephone Companies and the Automobile.

It is only a comparatively short time ago that the automobile was introduced. When it first came out, it was regarded in the light of a plaything for only the more wealthy people and was used for pleasure purposes only, if spending considerable time lying upon one's back in the mud or dust beneath an automobile or trudging several miles along country roads to obtain a farmer's team to haul a disabled automobile to town, may be called pleasure. But such occurrences are things of the past and the automobile is now rapidly coming into its own. It is seldom that it becomes disabled so that the users are forced to seek aid to reach their destination.

With this perfection of the mechanism of the automobile, and its reliability, by means of the hardest possible tests, thoroughly proven, its field has been broadened and now its use for pleasure purposes only is becoming small in comparison with its other uses.

Business houses use it for delivery purposes. In Chicago, the large department stores employ big motor trucks to convey goods to points in the surrounding suburbs where delivery is made to houses by the horse delivery route, but the horse is now to be replaced by light motor delivery wagons. This method of delivering goods by the department stores makes it possible for persons residing in the Chicago suburbs to make a purchase in the early afternoon and to find it awaiting them at their homes upon their return in the evening. Under the delivery methods formerly used it would take from two to four days to make a delivery to the suburbs.

Trucking companies are employing the heavy motor truck to an ever increasing extent. The heavy rolls of paper for the newspapers are now hauled by motor trucks where formerly four horses were required to haul one load. The coal wagons hauled by three horses are rapidly being replaced by motor-propelled trucks of larger capacity. On the heavy brewery trucks, the horses are also being displaced. In fact, the motor truck is rapidly displacing the horse in all lines of business, as was the case with the lighter machines for pleasure purposes.

Telephone companies early saw the possibilities of the automobile. First, the light runabout was used for soliciting and collecting purposes and to convey the troubleman in cases where it was unnecessary to carry a large repair outfit. This experiment worked out so well that light motor wagons were given a trial. These were used for light repair jobs on the lines in the country or on lines located some distance from headquarters. They were large enough to carry the construction tools, wire, etc. The time and money saved by their use was sufficient to convince the telephone companies that the wagons were a good investment and that their use should be extended.

The manufacturers of motor trucks saw the possibilities of motor trucks for telephone companies and designed special wagons and trucks for telephone purposes. As a result of this activity on the part of automobile manufacturers, the telephone companies were able to obtain trucks which were specially suited to their needs. Today some of the telephone companies not only use the motor truck to carry the construction crew and materials many miles to the place where the work is to be done, but also to haul the poles, then by use of attachments to aid in digging the holes, and setting the poles. By its use construction costs have been lowered appreciably and the time involved reduced to such an extent that the companies now using the motor trucks would not consider a return to the old methods.

In underground construction installations, the motor truck is used to haul the heavy reels of cable to the points where the cable is to be used. When the drawing in process begins, the work is done quickly and easily, by the aid of the truck. The truck is also used in stringing overhead cable and the results have been very satisfactory.

The use of the motor truck in telephone construction work is a quite recent development but the success which has attended its introduction indicates that it will in time become an important factor in work of this nature.

A Striking Argument for Competition.

In its opinion and order, which permitted the Michigan State Telephone Co. to purchase the properties of the Detroit Home Telephone Co., the Michigan Railroad Commission quite unconsciously enunciated an argument for competition as a spur to development which is as forceful as though it had been deliberately contrived for that purpose.

Recounting the early history of conditions in Detroit, the opinion said: "The Home Telephone Co. began its construction in Detroit in the spring of 1906. At that time, the evidence discloses, the Michigan State Telephone Co. had not to exceed 12,000 subscribers upon its city lines. The Home company proceeded to install a plant with a capacity for 30,000 subscribers, which, in point of facilities and equipment, the proofs show, was superior to most and second to none in the country."

What was the result of this effort on the part of the competing company? The people of Detroit were introduced, for the first time, to a modern telephone system. They learned what perfect telephone service really was and they promptly demanded that kind of service from the old company—the Bell. For various reasons, having no bearing on the basic principles of competitive operation, the new company failed to take the big lead which the Independent companies have commonly done in similar cases, but it did powerfully stimulate the Bell company.

As a result, while the Home succeeded in getting upon its books, during its four years of operation, only something over 12,000 subscribers—about the number, by the way, which the Bell had when the Home started—the Bell company made great leaps, and has now grown until, the commission's opinion says, it serves 67,863 stations in Detroit.

That is to say, under the spur of competition the telephone users in Detroit can now reach, over the lines of both systems, approximately 80,000 telephones, as compared with 12,000 four years ago, or over six times as many.

For the purposes of illustration it is quite immaterial which concern made the larger gains. It is the aggregate which is to be considered. This tremendous development in but four years is ascribable to but one cause—competition. Nothing else could have produced so radical a change in the telephone situation in Detroit in so short a time. Nothing else could have revolutionized equipment and methods of operation as they have been revolutionized since the Home company started. Left to itself the Michigan State company would have continued indefinitely to employ obsolete apparatus and bygone methods, as its sister company, the Canadian Bell, has done in Montreal, where, it was recently shown, a large number of Blake transmitters are still in use.

It may be that Detroit citizens will congratulate themselves upon having abolished the "nuisance" of two telephones. And it may be they will later find cause to regret having raised no opposition to the merger. But, whatever the outcome, they must still thank competition and competition alone for having multiplied the scope of their telephone system by more than six.

Will Government Sue for Dissolution of Bell System?

Reports Current in Chicago Agree That Action Will Shortly be Begun Under the Sherman Anti-Trust Law—Case Said to be Complete—Agents of Department of Justice Known to Have Been Invvestigating Bell Company for Many Months

Late last week a report was printed in the Chicago papers to the effect that the government was about to proceed, within a short time to the prosecution of the American Telephone & Telegraph Co., under the Sherman anti-trust act. No confirmation of the rumor is yet obtainable. The Chicago office of the Department of Justice has declined to comment on the matter. It was later reported that the Washington office had "semi-officially" stated that there was no "immediate likelihood" of the government's proceeding against the Bell organization.

It is generally conceded to be not improbable that action looking to the dissolution of the company would soon be taken. Agents of the Department of Justice are known to have been for some months investigating the affairs of the Bell system, paying particular attention to its relations with the Independent companies. But, until the suit is actually started, it is probable that no official statement will be given out by the government.

Following is a portion of the story which appeared in the Chicago Tribune. It is similar in tenor to those in the other papers.

> The government will file suit within a few weeks for the dissolution of the $500,000,000 American Telephone & Telegraph Co., charging it with violation of the Sherman anti-trust act. The bill to be filed will be under the act's civil provisions and will seek the same results obtained in the successful suits against Standard Oil and American Tobacco companies. There has been an intimation the company will be given a chance to dissolve voluntarily.
>
> The "Bell company" will be charged with absorbing Independent telephone and telegraph companies all over the country and maintaining a virtual monopoly in the former field. Its control extends into the electric manufacturing field through its control of the Western Electric Co., the second largest company of the sort in the United States, and is felt in numerous associated fields.
>
> The American Telephone acquired a substantial interest in the Western Union Telegraph Co. in 1909, and since then has operated more closely with the telegraph company than ever before.
>
> The Western Union alone has $100,000,000 capital stock, with $38,745,000 funded debt, and three leased companies, the Northwestern Telegraph, Mutual Union, and Gold & Stock telegraph companies. It guarantees return on the securities of various other telegraph and cable companies.
>
> Investigation has been going on in Chicago, New York, and the other large cities where the Bell is in control. The detailed information gained by Uncle Sam's investigators, all part of the general staff which has been doing the anti-trust work for the department of justice for the last four years, has not been given out. The government authorities simply say they expect to have sufficient information to warrant the filing of the suit.

Later, the Chicago Examiner printed the following additional item, under a Washington date line:

> It was learned at the Department of Justice this evening that the department has made out its case against the telephone trust and that the concern must dissolve or be taken into court.
>
> The attitude of the attorney general toward the American Telephone & Telegraph Co. and its components is precisely that which he assumed in the case of the beef trust and the harvester trust and all the combinations in restraint of trade he attacked following the decision of the supreme court in the Standard Oil and tobacco cases.
>
> The telephone trust will be given an opportunity to present to the attorney general a plan of dissolution, but this must be agreed to by the attorney general and made of record in some court, probably in Chicago.
>
> The investigation of the trust has been going on for about six months. Evidence has been obtained fully showing that this monopoly has stifled competition by buying up local concerns, throttling new enterprises and in general obstructing any opposition or rivalry.

Boersianer, the financial and stock market writer of the Examiner, added this, in relation to the effect of the announcement on the "street":

> Either the stock market did not believe the government would move to have the American Telephone & Telegraph Co. dissolved, or was insultingly incurious about the matter. The former inference was complimentary to the administration's political adroitness, the second quite the reverse.
>
> With the interesting exception of Telephone & Telegraph itself—which declined only one point and soon recovered half the loss—the market as a whole held firm.
>
> Telephone, however, was closely watched by the professionals in the early trading and when it yielded a point temporarily room traders sold their stocks, convinced of a headlong debacle. But the market was headstrong, not headlong. Its stiffness was not due to any particular assurances from Washington. The Department of Justice contended itself with stating "semi-officially" that there was no "immediate likelihood" of proceeding against Mr. Vail's company.
>
> Friends, in the street, of the administration went a little further. They were personally certain Taft has no intention of stirring up the corporations in view of the possible disturbance to business of such a step. Men in office are helped politically by prosperity and not by disquietude. Still it is not impossible that the president's advisers might deem litigation of the kind reported after the market on Thursday advantageous from a vote-getting standpoint.

It is freely predicted that the government is about to commence a series of suits under the anti-trust law, which will involve every "big business" enjoying a practical monopoly, and that the telephone suit will be the first. It is not suggested that any action will be brought under the criminal sections of the law.

California Company Would Raise Rates.

The Eel River & Southern Telephone Co. has made formal application to the California Railroad Commission to be allowed to deviate from its rates now in effect to such an extent as to make its tariffs uniform. The utility company in the application alleges that its rates are discriminatory to a slight extent and asks that it be permitted to iron out its tariffs in order to eliminate the discriminations. The company serves the town of Ferndale and adjacent territory, and under its proposed tariff change its revenues will be increased $32.50 per month.

Assessment Values in Oklahoma.

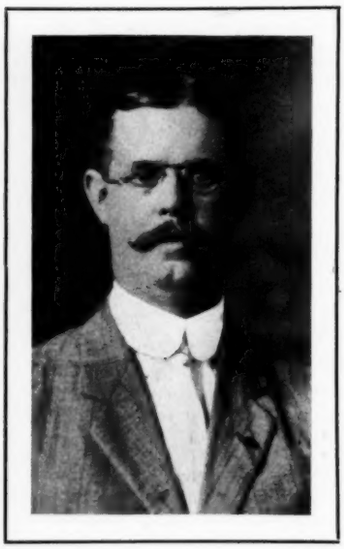
Figures compiled by the state auditor of Okahoma show that the total assessment of public utilities in Oklahoma for taxation purposes this year is $259,810,048. This includes telephones, $6,043,697, and telegraphs, $1,648,174.

Extending Lines Into Oil Fields.

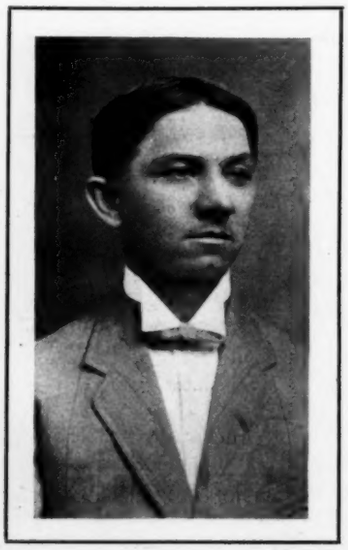
The Hominy (Okla.) Telephone Co. is extending its lines into the heart of the Osage oil fields.

A Quartet of Men Prominent in the Telephone Field

ROBERT HENRY POLK, general manager of the Memphis Telephone Co. and of the Memphis Long Distance Telephone Co., Memphis, Tenn., was born at Richmond, Va., July 7, 1865. He was educated in the Richmond schools and the City College, at Baltimore. He went to work as operator in the Richmond exchange on June 15, 1879. On December 4, 1882, he went with the Southern Bell, at Birmingham, as operator and troubleman. In May, 1883, he was made manager at Montgomery, Ala., and in November, 1890, was transferred to Savannah, Ga. There he remained until April, 1899, resigning to become assistant general manager for the Georgia Telephone & Telegraph Co. He built the Independent plant in Savannah and, in May, 1901, took charge of the Peoples Home, at Birmingham. On January 1, 1904, he became manager of the Memphis company. Mr. Polk was the original inventor and user of the common return system and has also evolved a number of other practical inventions. He is a member of the Memphis Engineering Society.

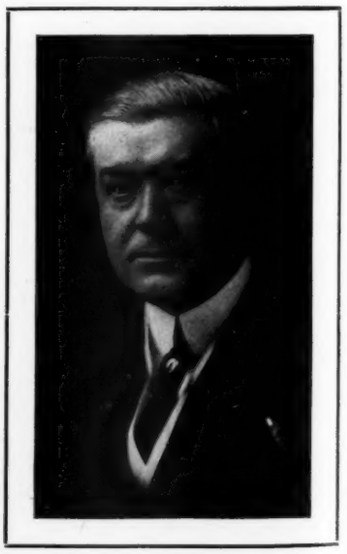


NODY STARKEY, president and general manager of the Eastern Kentucky Home Telephone Co., the Whitesburg Telephone Co., the Letcher County Home Telephone Co. and the Dickinson County Telephone Co., with headquarters at Pikeville and Whitesburg, Ky., was born in Switzerland in 1872, coming to this country when a child. He received his schooling in the schools of Somerset, Ky., and Chattanooga, Tenn. Mr. Starkey was in the laundry business before entering the telephone field. In 1890, he built the system of the London (Ky.) Telephone Co., with connecting lines; in 1893, he bought the Pineville (Ky.) Telephone Co.; in 1906, he built the Pikeville system and that of the Eastern Kentucky company, the latter owning and operating lines in ten counties, in three states and comprising over 400 miles of toll lines, connecting with the Southern Bell lines and others; in 1910, he bought the Whitesburg, Letcher and Dickinson systems and built more toll line connections. In 1911, he was appointed local manager for the Western Union Telegraph Co. He is a Mason and an Odd Fellow.



JOHN WILLIAMS COFFEY, proprietor of the Coffey System & Audit Co., of Indianapolis, and expert telephone accountant, is a member of the executive committee of the Telephone Traffic Commission of America. He is a 32° Mason, a Knight Templar and a Shriner. From 1891 to 1900 he was agent, operator and dispatcher for several western and southern railroads. In February, 1903, he became auditor and assistant manager for the Tippecanoe Telephone Co., of Indiana. In July, 1904, he was made toll auditor for the New Long Distance company, later becoming its traffic manager and, in 1907, general auditor for both the New and Indianapolis companies. In 1908, he organized the Indiana toll clearing house, serving for some time as secretary, treasurer and general manager and resigning to take up general telephone systematizing and accounting in his own name. In March, 1911, he was retained by the Illinois association to establish a toll clearing house in that state, which he successfully accomplished. He was born in Ellettsville, Ind., October 26, 1875.

HARRY H. ROBINSON, general manager of the Home Telephone Co. of Michigan, at Detroit, was born in that city May 19, 1874, and was educated in the Detroit schools and Phillips Academy, Andover, Mass. He became a clerk in the Chicago offices of the A. T. & T. Co. October 1, 1896, and was promoted to district chief operator January 1, 1897. On May 1, 1897, he was made special agent for the Central Union; traffic manager January 1, 1898; general superintendent, January 1, 1899; general superintendent of the United States Telephone Co., Cleveland, October 15, 1901; assistant general manager January 1, 1902; general manager, January 1, 1903. He was made general manager for the telephone branch of the Illinois Tunnel Co., in Chicago, September 1, 1903, and built the plant. On March 1, 1904, he was appointed general superintendent for the Michigan State Telephone Co. and, on July 1, 1909, general manager of the Detroit Home. He has originated many devices and inventions for the betterment of the telephone business, among which is the "Wayside" telephone service.



Relation of the Wisconsin Commission to Public Utilities

Abstract of a Paper Presented at the Annual Convention of the Iowa Independent Telephone Association—The Methods Used by the Railroad Commission in Checking up the Service of Telephone Companies and Means Adopted for Improving It

By J. N. Cadby

In Wisconsin the railroad commission regulates railways (whether they be steam or electric), waterworks, gas plants, electric light plants, telephone companies, express companies and toll bridges. It matters not whether these are owned by individuals, by corporations or by municipalities; they all fall under absolutely the same requirements. The municipal plants must live up to just the same requirements as the privately owned plants. Those owned locally must live up to just the same requirements as those owned by Wall Street.

One of the provisions of the public utilities law, is that before a new plant shall start up, where there is one existing, the organizers must receive from the commission, a certificate of convenience and necessity. Before such a certificate is granted by the commission, a public hearing is held, to which interested parties are invited.

The announcements are made public through the press and otherwise, and the local authorities are all notified, as well as representatives of the plant already operating. If there is one street railway in a city, a second one cannot be started without going through a public hearing and having a thorough examination made into the conditions by the commission; and at this public hearing the municipality and the company already operating are heard.

Features of Wisconsin's Public Utilities Law.

Another feature of the public utilities law in Wisconsin is that of the indeterminate permit in place of the old franchise. At first the companies were allowed to come under this feature of the law, by turning in their franchises and taking in place of them, indeterminate permits. Later the time was extended during which they would be allowed to exchange their franchises for the indeterminate permits. The last legislature placed all public utilities under this feature of the law, so that now all public utility companies are operating under indeterminate permits instead of under franchises. Thus franchises do not expire at the end of a given period, and the city can at any time vote to take over the plant.

A valuation of the property is made by the railroad commission, at which the plant must be taken over, giving a fair return to the operating company. There have been cases in other states at other times when the public utility company at the expiration of the franchise period, practically lost its property with almost no compensation. There is no opportunity for such action under the present laws of Wisconsin.

Another feature of the law is the regulation of stock and bond issues. This allows the investor to be protected. The stock and bond issues represent real value, and there is no chance for watering the stock.

Reasonable rates are established by the commission. Sometimes they are raised; many times they are reduced; and probably in the greater number of cases, they are re-arranged, changing the income to the operating company but slightly, but making the proper division between the various classes of consumers, so that there is more equitable apportionment of the expense. Where rates have been established by the commission after an investigation, the increase in business has been in practically all cases, considerably greater than before, showing that the scientific rates, worked out in the manner in which they are handled by the commission, stimulate new business.

Adequate service must be furnished. That means a good deal, and takes into account a large number of features. There is also need of safety of construction and operation, which comes in for a share of attention. Railroads are required to stop or to make proper connections at junction points with other roads. The matter of physical connection between Bell and Independent companies, for instance, is now up in the La Crosse case. I think that it will be made a test case and be carried to the supreme court to see whether that feature of the law will stand.

Valuation of Physical Property.

In connection with the valuation of physical property, whether it be for condemnation, for stock and bond issues, or for rate making, the law requires that all the physical property be valued, and that it be apportioned between the various uses for which it is maintained. For instance, a company operating both railway and lighting must be valued, and an opportionment made between that part used and useful for the railway, and that part used and useful for lighting.

Depreciation is taken into account in investigating the present value of the plant. The commission determines the cost new, using information from a number of sources, taking the average for five years as nearly as can be ascertained; deducts from that the scrap value; applies the depreciation curve, taking into account the useful life of the particular class of equipment, the age of the equipment at the time the valuation is being made, the condition in which it has been maintained, and by curves plotted upon the compound interest basis, it determines the present condition of the equipment, adds on the scrap value and determines the present value of the entire property.

The Going Value of a Plant.

To this present physical value is added 10 or 12 per cent. for engineering and contingencies; interest during construction, when the plant is earning nothing, the cost of organization and legal expenses, and such matters which are really expenditures in building up the property, before it becomes an earning property.

When the profit upon the plant has been low, it becomes necessary to take into account the going value at the time of the valuation. If a property has been paying good dividends, then a rate could be made upon the physical property which would be fair and just; but since in building up a new business, it usually takes considerable time to get it to a point where it pays, it is necessary to take into account the profits which have not been paid out of the business, which really should have come in the way of interest, depreciation, etc.

When losses have been incurred in order to keep the plant running during this early period, there should be compensation for this amount. That is taken into account by the commission in building up the figure which it calls the going value of the concern. This will be higher than the present value, and may be either higher or lower than the cost new. The plant is allowed to earn, in addition to interest upon its physical property or upon its going value, taxes, interest, insurance and operating expenses.

There probably are cases where bad investments have been

made or where poor management makes it impossible to maintain a rate and at the same time build up the business or even continue in business at all. If very poor investments have been made or there has been poor management, it might require such a high rate that it would discourage consumers en-

JOINT ENGINEERING DEP'T WIS. TAX & R. COMMS. **Telephone Service Inspection**

City..... Name of Co..... Date..... Insp.....

	Party Called		Time to Ans.		Time of Test	Call Made From
	Number	Name	By Cent.	By Party		
1						
2						
3						
4						
5						
6						
7						
8						

(ALWAYS CALL R. R. STATIONS) (OVER)

Fig. 1.—The Inspector's Test Card.

tirely. So each case must be treated separately, and the past history of the plant must be taken into account in determining the proper rates.

In all the work of regulating service, the supervision of the work is all that is attempted by the commission. It does not attempt to get out and find all of the bad places on a system, but encourages self-criticism on the part of the utility companies, and simply makes checks to determine the thoroughness with which the operating companies are carrying on their work. The inspector does not announce himself before he arrives, because that would necessitate, in practically any organization, a little difference in the quality of service furnished. One cannot do just the same when he knows he is being examined as he would if he did not know. Therefore, the inspectors go into a place unannounced and start their tests. Before they leave, however, they show the records that they have taken to the proper authorities of the operating company, and take up with them the various matters. If the conditions are abnormal and can be explained, that explanation is noted upon the record which is later sent in to the office.

From the office, a report is sent to the company, and if it does not reply, stating that necessary changes have been made or are about to be made, then the matter is followed up again. If repeated letters do not bring about the necessary requirements, the company is required to appear before the commission in a public hearing and show cause why the commission should not proceed to enforce these requirements.

The kind of telephone test cards that each inspector carries around in his pocket is shown in Fig. 1. Every time the inspector has occasion to call up the express office to know whether his trunk has come, or to call up the depot to find out is busy, the giving of a wrong number when such is the case, and the time of day and telephone from which the call is made. This allows the matter to be followed up to see whose fault it is or what the particular operating conditions were at the time of the test.

These test calls are made from house to house without being announced beforehand. The inspector who does this work has to be rather ingenious; he must manufacture conversation without getting himself into trouble; he must ask the grocer, the butcher and baker and a lot of other people a lot of questions which will not make the operator or the party called or the party whose telephone he is borrowing, suspect that a test is being carried on. This would mean abnormal conditions; not necessarily because they want to have things look better, but because human beings couldn't help doing things a little differently if they know the inspector was checking up on that particular day.

On the back of the card, Fig. 1., there is room for more complete remarks, if the inspector notes anything that needs further attention; if he is not able to hear properly, if the

Exchange.	Kind of system.	Total average time in seconds.			Percentage of calls answered in 5 seconds or less.	Reported busy		[1]Subscriber "don't answer".		Given wrong number, per cent.	Supervisory signals, per cent.
		To get central.	To get subscriber.	Central from pay station.		Average time.	Per cent.	Av. time to report	Per cent.		
1	Central energy	5.29	29	5.7	68	23.7	2.7	92	12.5	5.4	12.8
2	Central energy	4.52	25	4.6	77	19.6	4.5	68	17.8	1.8	3.6
3	Central energy	7.30	26	10.6	53	14.0	5.4	68	19.0	1.8	1.8
4	Central energy	4.51	26	4.0	79	13.1	7.1	68	15.0	1.8	11.5
5	Central energy	5.14	24	None tested	74	10.3	9.8	60	19.0	4.5	6.2
6	Central energy	3.17	20	2.5	95	7.8	3.6	67	11.0	0.9	8.0
7	Central energy	4.41	24	7.3	80	11.8	3.6	72	18.8	3.6	23.0
8	Central energy	4.44	24	4.5	82	12.0	7.1	71	12.5	1.8	6.2
9	Central energy	3.99	23	3.7	84	10.6	6.2	60	9.8	1.8	14.0
10	Central energy	4.54	22	None tested	81	8.8	6.2	60	9.8	4.5	4.5
11	Central energy	3.33	22	3.3	89	10.6	4.5	60	6.2	1.8	10.6
12	Cent al energy	3.33	19	None tested	96	7.0	5.4	74	12.5	2.7	6.2
13	Central energy	4.49	22	5.9	77	11.1	9.8	64	18.8	1.8	9.8
14	Central energy	4.89	24	9.1	86	11.4	8.0	71	12.5	0.0	12.5
15	Central energy	4.52	21	4.4	79	10.0	5.4	62	7.1	2.7	6.2
16	Magneto	4.72	25	4.5	79	8.8	3.6	68	23.0	2.7	9.8
17	Central energy	3.68	24	3.3	89	12.4	4.5	63	13.5	4.5	9.0
18	Central energy	4.92	21	8.3	74	10.8	4.5	66	13.5	1.8	9.8
19	Central energy	5.23	25	5.6	66	9.8	5.4	69	27.0	1.8	19.0
20	Central energy	5.77	27	5.4	60	24.0	2.7	52	18.8	3.6	6.2
21	Automatic	About 6 sec. to ring No.	20	19.0	Automatic	9.7	5.4	70	20.0	0.0	Automatic
22	Magneto	5.69	26	6.7	60	13.4	6.2	85	22.3	0.9	8.0
23	Magneto	5.76	26	5.1	66	16.0	4.5	94	13.5	5.4	3.6
24	Magneto	6.93	25	9.2	49	14.6	6.2	79	25.0	0.9	2.7
25	Central energy	4.16	22	6.1	86	10.7	6.2	59	15.0	4.5	10.6
Average of the "Wis. 1909 test" (2,800 observations)		4.78	23.8	5.0	76.2	12.0	5.5	69	[1]16.1	2.5	9.6

[1] The high percentage in this column is due to the fact that all calls, except "busy" reports, were listed as "don't answer" calls where inspector was unable to get party. In all cases no call was discontinued before 60 seconds.

Summary of Tests Made by the Commission's Inspectors, Covering 25 Exchanges in the Largest Cities of Wisconsin.

when his train will leave, he records the number and name of the party he is calling, the time required by the operator to answer, the time required to get his party, and how often there is supervision in case the party does not answer promptly. Also he notes how long it takes to report that the line receiver is broken or out of order, or he notices anything else which needs attention, all this information is reported and the company is notified promptly about it.

An inspector can make about a hundred test calls of this sort, calling only about twice from each telephone, unless he

gets in jail. Every once in a while an inspector is taken by some person whose telephone he is using, to be a suspicious looking character, who wants to find out the lay of the land, so as to notify the rest of his gang and come in and rob the house that night. In several cases it has taken the detective forces of the cities a good many hours to run down our man, because he shifts around from one part of the town to another and is sometimes very difficult to catch. They have been locked up two or three times.

From these test cards, we plot curves showing the speed of the operator in answering. That seems to be the best measure of the service. Of course, it is not the only factor, as you know, which goes to make up adequate telephone service; the speed in connecting, accuracy, and other factors, such as supervision in maintenance enter into it; but we find that if the operators are answering promptly, they are usually giving the right number and supervising properly. We have more trouble when they are not busy enough or too busy, than when they are able to answer promptly.

The commission has not formulated any exact rule regarding the time which will be allowed to answer calls, or the percentage of calls which must be answered within a given time. However, for the larger exchanges we expect that 85 per cent. of the calls will be answered in five seconds or less, that very few wrong numbers will be given, and that the supervision and transmission will be satisfactory.

We also take up such matters as the number of parties on a line, the quality of the equipment, whether there are enough positions on the board and enough operators during the different periods. The whole subject is studied to some extent in each case. The commission also encourages tests by the company representatives, whether they employ the observation board of either portable or stationary type, or whether the solicitors and other employes or officers, in going about, make the calls; then we compare with them on results.

The accompanying table gives the summary of a test made during October and November, 1909, covering 25 exchanges in the largest cities of the state. At the present time, we regularly inspect forty-five of the larger exchanges. The service in each city is treated individually. In addition to the regular inspection of 100 test calls, we inspect wherever there is a complaint, no matter whether it be large or small, and we follow up the conditions in the place where we find poor service. There is no difference in the requirements for privately owned corporation or municipal plants.

A curve sheet for one particular exchange is shown in Fig. 2. Curve *A* was the average of the twelve fastest exchanges in the state for those two months that I have just mentioned. This particular exchange was one of the twelve. Its condition is shown by Curve *B*. You can take five, ten, eight, twelve, or any number of seconds and find the percentage of calls that were answered during that period. First the company had sleet storms, then a shortage of operators; another time it had inadequate switchboard capacity and then had a strike. It had its ups and downs, as is shown by some of the curves.

In this particular city there were formerly two exchanges, the Bell and the Independent. Shortly after the commission went into office, the Bell company bought out the Independent company. The two exchanges were combined, going through the general stages: first, a connection between the two exchanges, and then finally the combining of the two into one, eliminating one exchange and operating entirely from the Bell exchange. That, together with the other items which I mentioned, caused the low curves. I can report that probably 84 or 88 per cent. of the calls is now answered in five seconds or less, with practically every call answered within nine or ten seconds.

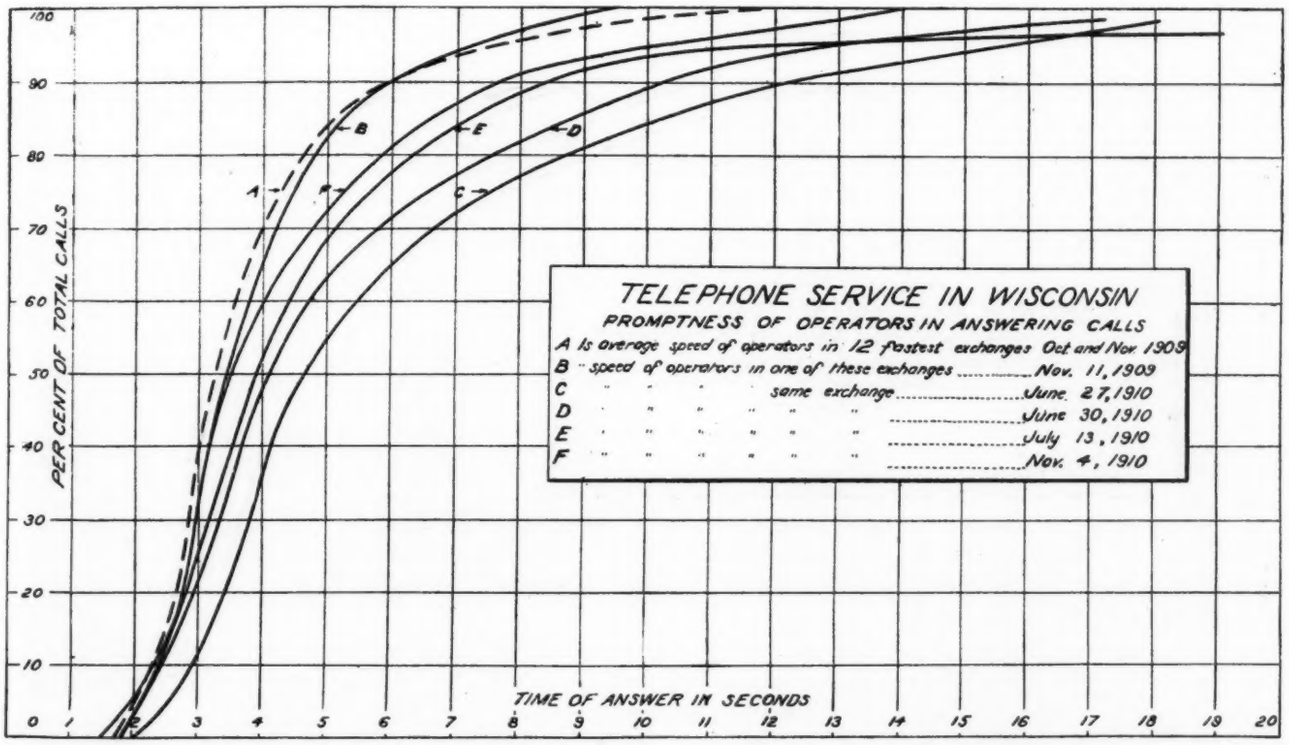


Fig. 2. Curves Showing Operators' Speed, From Data of Tests in Twelve Fast Exchanges, and Variations in Service in One Exchange.

Considerable expense is incurred in carrying out all the different lines of the work which the commission is doing. There are nearly one hundred people in its employ, some for full time and some for only part time. Many of the men at the University of Wisconsin are serving the commission a part of their time, or at irregular intervals, when they are needed.

There are the legal, statistical and accounting groups, the valuation group, the safety service group for block signal and

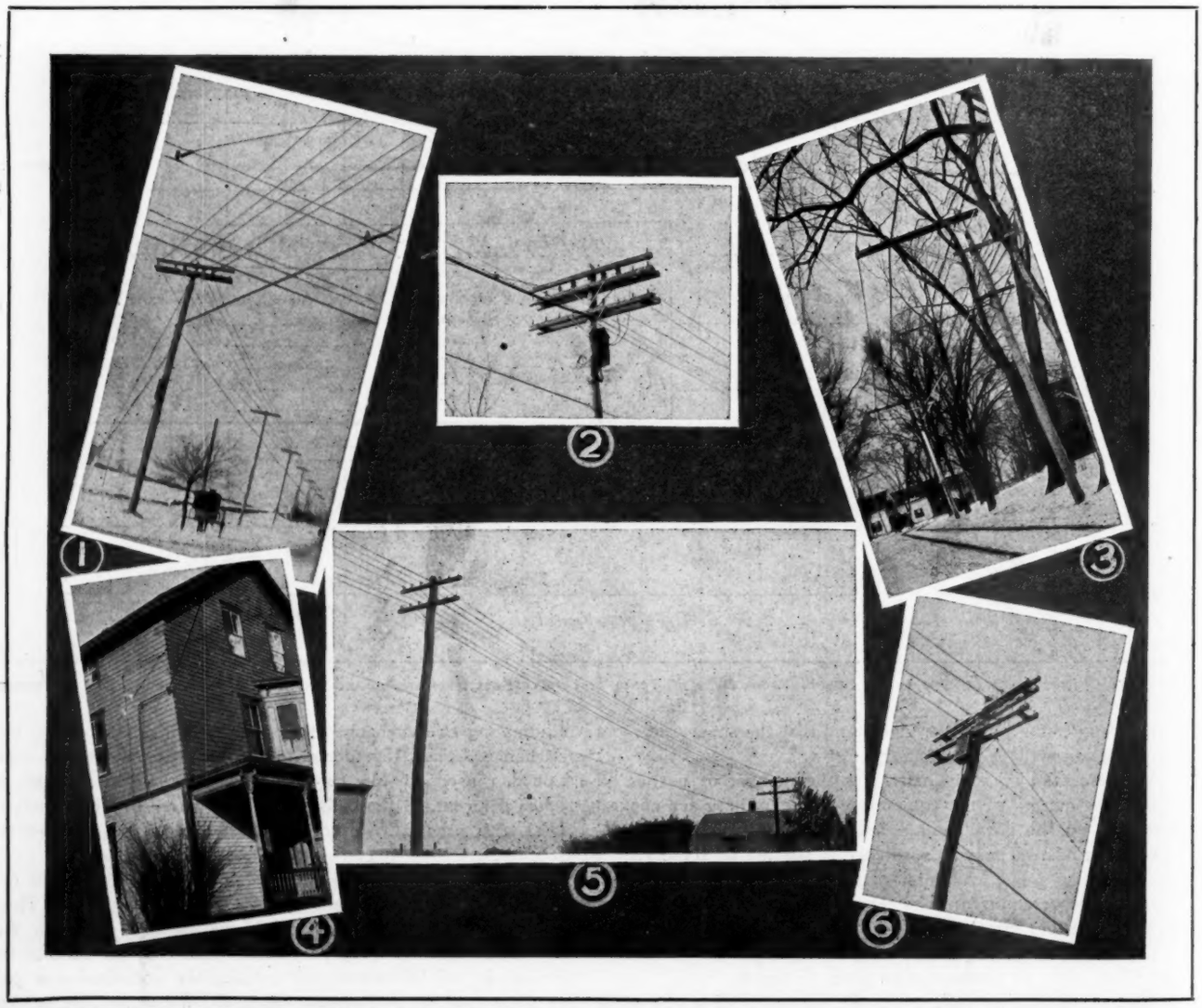
interlocking plants, and then the service inspection group who are checking up gas, electric, telephone, water and railway service. The commission has quite a laboratory and quite a library, and we co-operate with engineering societies and societies of various kinds, and with other commissions and governing bodies. Of course a great deal depends upon the commissioners themselves. They are given a great amount of power. A body of men who did not wish to conduct their part of the work as it should be conducted would, under this arrangement, be able to do a great deal of damage.

The commission in Wisconsin is eliminating the unnecessary duplication; it is educating the public by explaining technical points; it acts as a board of arbitrators in various cases; it gives legal consulting advice to small companies and small municipalities, where such is necessary, and it sees that the stocks and bonds issued, represent real value. It is working toward the establishment of reasonable rates and adequate service. The conditions are not perfect, and the work is not being done as well as we would like to see it, when we get right down to the fine point, but we think it is a step in the right direction, and that conditions are very much better now than they were before the commission went into office.

Joint Use of Poles by Public Utility Companies

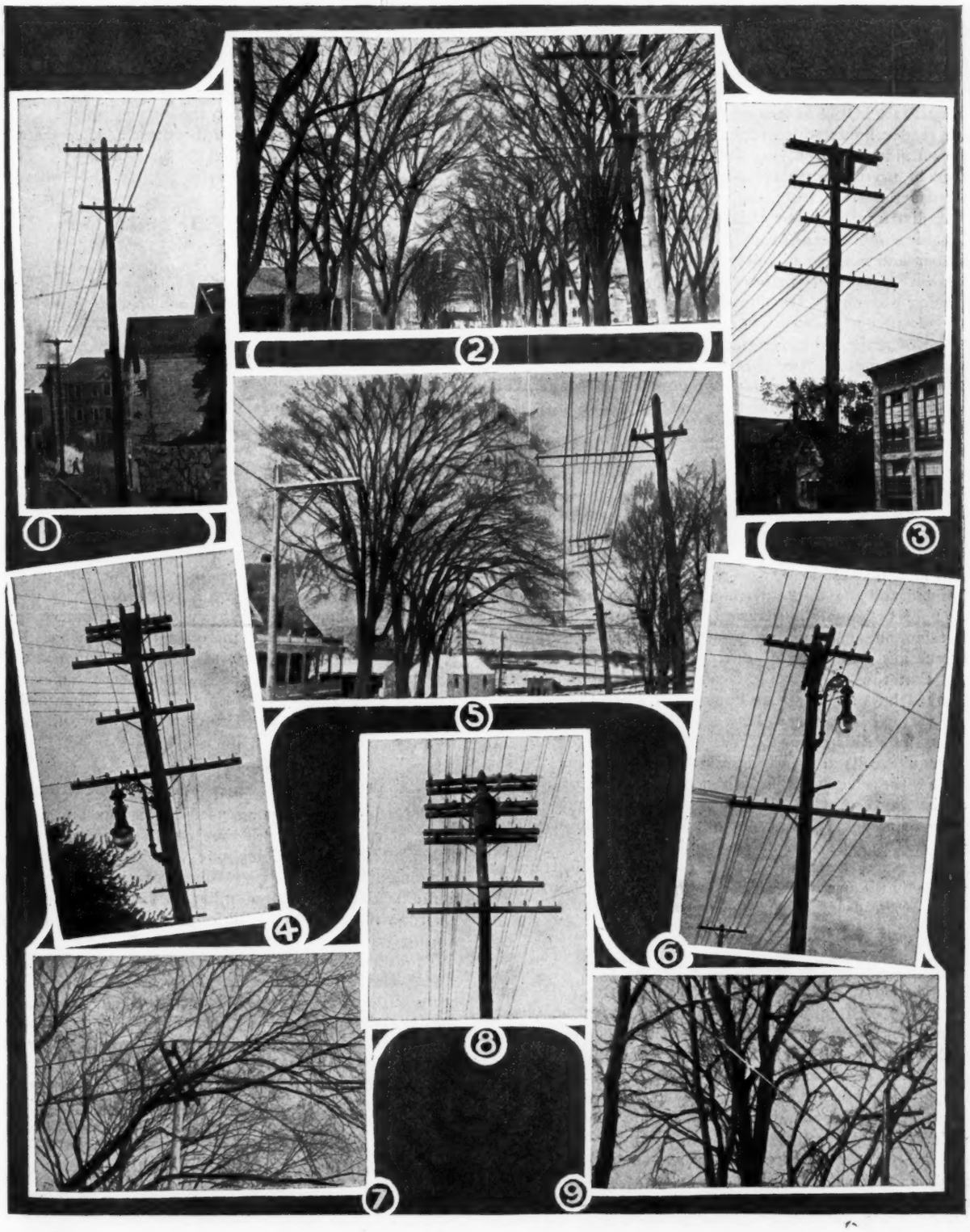
The problem of the joint use of poles by several companies presents many difficulties, says the New England Telephone Topics, through whose courtesy the illustrations are reproduced. The accompanying photographs show the solution as found in Fall River, Mass., the parties interested being the Fall River Electric Light Co., the Bay State Street Railway Co., the Automatic Telephone Co., and the Southern Massachusetts Telephone Co., as well as the Fall River municipal fire alarm system.

Through agreement between the above-mentioned companies, the electric light wires are always placed on the top gains of the pole, thus placing the wires that need the least attention and that are most liable to trouble the other parties, at least 48 inches above the next user, which is the city, when the fire alarm system is on a pole. Next comes the Southern Massachusetts Telephone Co.'s space and then that of the Automatic Telephone Co. Reference to some of the photographs will show this clearly. The space be-



1.—A joint pole line in Swansea, Massachusetts. 2.—End of aerial electric light lines. 3.—Arms offset to obtain sufficient separation between electric light and telephone cable. 4.—House cable. 5.—Telephone cable with guard arm on one pole and six-foot separation on adjoining pole. 6.—Electric light cable box.

Some Interesting Examples of Joint Pole Use



1.—Pole used by electric light company, fire alarm, and Southern Massachusetts Telephone Company. 2.—Case where sufficient separation was obtained by offsetting the arms carrying cables. Electric light wires on top arm and telephone wires on second arm. The street railway company is also a user of the poles. 3.—Wires of all three companies and also fire alarm wires on this pole. 4.—The two top 4-pin arms, including reverse arm, and the top 6-pin arm are used by the electric light company. The next 6-pin arm carries the fire alarm wires, below which is the ring construction of the Southern Massachusetts Telephone Co. The bottom 10-pin arm is used by the Automatic Telephone Co. 5.—Offset arms carrying electric light cable to clear the trees. 6.—Joint use showing arc lamp above telephone wires. 7.—Avoiding tree interference by use of offset arms. 8.—Electric light company pole carrying wires of both telephone companies. 9.—Cable run through trees.

tween the wires of either of the telephone companies and the electric light company is thus in most cases at least six feet, a distance that is considered as affording protection to both parties. Where this distance can be obtained, the expense of placing a cross arm above the telephone cable as a guard, which must be done if the separation is less than the above, is eliminated.

The Fall River Electric Light Co. has an engineering department that looks to future as well as present needs, as, for instance, in the extensive use of underground cable on main feeder lines, with proper provision for taps to aerial lines on side streets to handle the service that may be expected in any district, during many years.

Across the river from Fall river are the exclusive residence districts of Swansea and Summerset and here the companies found trees on both sides of the streets so close together and with so many branches as to make the use of open wire practically impossible. It was found that tree trimming was out of the question so the electric light company adopted what was then considered as an experiment, the use of aerial cable for four-wire, three-phase, 2,300-volt commercial circuits, with another similar cable for the street light circuits which have a maximum of 3,500 volts. This cable has now been in use for some time and has proven satisfactory. It is made up of copper conductors, each insulated with rubber. All the conductors are then wrapped with rubber and a steel tape wound around to give mechanical protection.

The initial installation approximates one mile in length and has proven very satisfactory. The cables are hung in a manner similar to telephone cables on 10,000 or 16,000 pound stranded messenger to which the metal cable sheath is bonded and the whole permanently grounded. One view (No. 2 of the small illustration) shows both electric light and telephone cables at a point where the electric light construction changes from open wire to cable. It is to be noted that the "electric light cable box" is similar to that employed by the telephone company. Here there is sufficient vertical separation between the cables, but picture (No. 3, same illustration) shows where this was impossible. The required distance was obtained by outrigging the arm carrying the electric light cable, on one side of the pole and the arm carrying the telephone cable on the other. This pole also carries a 500-volt feeder of the Bay State Street Railway, as well as the trolley arm.

Another new departure on the part of the electric light company is the use of three conductor cable for house loops instead of the separate wires customarily used.

The Rural Telephone.

Norman Eddy, a prosperous farmer of Northern Michigan, recently delivered an address at a grange meeting at Menominee, in which he discussed the benefits of a telephone for farmers. Mr. Eddy's address, which was published in the Bell Telephone News, is as follows:

Would a telephone be a paying investment in this community? It most certainly would, when we take into consideration all the pleasure and comfort there would be in such an investment, and the errands necessary which now take hours and even days. Time is money; so are the wear and tear of shoe leather, and bodily fatigue, and the use of a horse and the rig. With the telephone system installed in our homes, we accomplish the work in a few minutes while sitting in our easy chairs. Our opponents will say that the telephone is a big expense. It may be a little heavy at first, but nothing in comparison to horse flesh and keeping up rigs.

With the telephone in our homes, we could stay at home and transact a big part of our business, which would be a money saving. We would then have more time to put in on our place for improvements, which is also money. With the telephone in our homes, we could visit with our neighbors and watch the place at the same time, which is more money.

Many strangers would want to send messages. If we charge them the right price and credit the telephone system, it would go a long way to defray expenses in keeping the line in repairs.

A neighbor might be in great distress, sickness, or danger of fire. With the telephone, how easy it would be to call the whole neighborhood to his assistance! Why not make use of the privilege which is ours, and be up to date and in touch with one another and alive to the outside world?

In other communities where they have adopted the use of the telephone, they say they would not be without it.

Sometimes we need a doctor in a hurry. See what you have to do to get one; you hitch up a horse and drive ten or twelve miles, where, if you had a telephone, you could have him at your home in less time than it would take to drive to his office or home.

Again, if your grange master wanted to change a meeting or make any other notifications, he would do it without spending his time in running around notifying his neighbors. With the telephone, the grange committee could transact its business and stay at home. All these things go to show that the telephone would pay.

We do not expect to get back in dollars and cents what it costs to install the system, but the labor saving is the dividend. There is none of us but has a day now and then which we could give in getting the poles and wire in place, and that is easier than paying for the whole thing. If you have eggs, butter or chickens or any other things to sell, you could call up the market, get the prices, make the sales, and know just where to deliver the goods before you leave home. If you want to bring back a load of supplies, send in your order before you leave and it will be ready when you have disposed of your produce. Will the telephone pay? Why, it cannot do otherwise!

I had a little experience the other night, to which I give the telephone great credit. I started to meet a doctor at the depot, and when I got half way, there was a telephone message which told me that he could not come. This saved me a long, cold drive which, if we value comfort at all, was worth five dollars to me.

Rural Companies to Spread Information.

The telephone is being used in an unusual way in this state in connection with the Iowa State Fair. Col. H. A. Allen, of the Iowa Telephone Co., has just completed arrangements whereby rural operators in all towns within a radius of one hundred miles of Des Moines will notify their patrons as to the information bureaus in that city during fair week.

Thousands of farmers and residents of cities over the state, who are not familiar with Des Moines, have difficulty in locating rooms and getting about while attending the exposition. To meet this situation the Commercial Club will operate two monster information bureaus in the city.

The exchange operators have been ordered to notify subscribers of the location of these bureaus. The idea has never been tried before in the knowledge of local telephone officials, and the results of the experiment are awaited with interest.

Telephones in Jerusalem.

The latest bit of enterprise in the Holy Land is the beginning of a telephone system over the city of Jerusalem, writes a foreign correspondent. For the first time in all its long history the Holy City hears the tinkle of the telephone bell. The new courthouse at Jerusalem has been connected with the old serai, and the system is to be extended until first all official points, and then business houses and residences are supplied with telephones.

Has the Hour Struck?

The Bell Dissolution Suit—Recognition at Last

By J. C. Kelsey

I have a confession to make. I did not believe the government would take a hand in the telephone matter. While the fact of the suit is denied at Washington, there must be something to it.

I believed the company was too strongly intrenched, politically, to be subjected to attack. I suspected Senator Crane of too much power, and I had a strong suspicion that Brother Charley would back-pedal.

Apparently, I was wrong. It seems that nobody knows all about everything. It is a good lesson. Corporations have the same limitations as individuals!

There was inside information given out that there would be no suit. Those on the "inside" are not on the inside at all—they only think they are.

A friend of mine once said that there was an "inside" to every inside in existence. He once was a real insider on a pooling agreement until he awakened. There proved to be another "inside."

Wall Street had it "doped out" that President Taft would not do anything to disturb business. Surely he would not worry the telephone company—but he did!

A dissolution suit against the Bell company will not disturb business. It will only help to clear up the atmosphere. The Bell organization cannot go on indefinitely, without an exact knowledge of their legality. And it might as well learn that now.

I have always insisted that a universal telephone monopoly would defeat its own aim, financially and physically; that an increasing loading line of unproductive expense would eventually weight such an ambitious program below the net earning line.

We all know that the question of increasing rates is a difficult one. And that the tendency to get increased rates cannot keep speed with the cost increase.

You wonder what I mean by "the increasing loading line of unproductive expense." It is that tendency of a big business organization which makes too many bosses for those working. A group of officials merely passes orders up and down—too much red tape!

Finally, a lone productive laborer gets the order and the work is done, when he had sense enough to do it without orders.

Economy is the only law of business success. The universal idea of telephone service cannot lay claim to a single economy. It is based upon extravagant notions, pure and simple.

If the dissolution takes place and each unit is put upon its own feet, the Bell licensees will make great successes. No one can demonstrate to me that the telephone business is not a local issue.

The Bell company should welcome the suit!

The most perplexing situation, to my mind, is the relation of the licensee Bell companies and the Western Electric Co. The monopoly contract between these concerns would not be greatly injurious if it went no further. But it goes further!

The Western Electric Co. being in the open field, backed by the power and profit of that monopoly contract, is and always will be a menace to Independent manufacturers.

As long as they follow a reasonable program the Independent manufacturers can get along. But I would like to see this modern sword of Damocles removed. You remember it only hung by a hair!

I hope the government will see the restraint features of this manufacturing situation.

This situation is my only quarrel. The Vail letter regarding connections settled the question of breaking toll contracts. If they are consistent and honorable in regard to the letter and spirit of these instructions we cannot ask for any more.

I have no quarrel with the Bell-Western Union alliance. The idea is a sensible one, as far as the public is concerned. I never was clear in my mind as to why the Bell company was anxious to take over the rotten telegraph property, unless it was eventually going to transfer it to its own poles and right-of-way. It was a courageous thing to do. But an alliance between the telephone and telegraph is natural. I don't believe any court will for one minute interfere. Besides, the Western Union still has the effective competition of the Postal Telegraph company.

I should sincerely regret the abolition of the night letter and other conveniences.

And as far as telephone mergers are concerned, where they have been accomplished with the sanction of the state corporation commission, it is not likely that the courts will interfere.

Like the Standard Oil Co., the Bell crowd has a bad past. And in a suit this past will have a big part. It will haunt them.

It is curious to note the attitude of financial writers regarding the suit.

"The Bell organization no doubt has vulnerable aspects, but these seem to be countervailed by its legally fundamental invulnerability." Further, "it has no monopoly of the telephone traffic."

Now, the last part is a great concession. I never knew that New York recognized telephone competition as existent.

It is a pity that this suit was not pulled off several years ago. Today the government will find that it has set out on a thankless job. If vote-getters prompted this suit, it will not gain a dozen votes.

I do not believe it comes from any such standpoint. But it is a thankless job to start out on, just the same!

As far as I am concerned, I look with pride upon the victory over the oil and tobacco bunch. While it did increase some stock values, how does that compare with the moral points gained?

Ten years ago, would any one believe that any judge or court would defy John D. Rockefeller, or the Standard Oil Co.?

Today we know that the hand of the law is not paralyzed. And that we have a newer respect for the supreme court.

It has dawned upon trust managers and directors that public opinion is a factor that cannot be disregarded. But public opinion is a funny thing. It never works twice the same way.

Public opinion always votes for one telephone system where two exist. And will vote for two where one exists.

Public opinion frowns upon stifling competition, but sits complacently by when competition is openly bought out.

I feel sorry for any president as long as the Sherman act exists. It's "damned if I do, and damned if I don't!"

It gets back to the futility of trying to please everybody. It can't be done!

It is understood from certain sources that the Bell company will dissolve voluntarily. It will be a very interesting thing.

Undoubtedly lawyers advised them of the entire legality of their past actions. But lawyers are human. Anyone can buy a legal opinion to suit. But it does not always mean that you will not go down to defeat in court.

I am inclined to believe that there has been too much highbrowed legal advice given, and not enough of the elements of common sense considered. Giving telephone service is a low-browed business.

I hope that there will be a voluntary reorganization along real economic, as well as legal lines.

I am sure the government will be surprised at the attitude of the Bell company. There are new faces and new influences at work. And they are surprisingly frank. They are out to make money and protect their investors. They have ceased to strive for a theory. Witchcraft possibly does still exist in a part of the Bell organization. But these influences have had their day and failed.

No institution will have to clean house more vigorously than the Bell company. They have too many drones. A dissolution will be about the only thing that can perform this heartless act.

Dry rot is a terrible disease, and will wreck the strongest institution.

No sane man can deny that the Bell company has certain rights. Independents came along and made a fight, and they had to fight back. What saved us was the obsolete weapons used by the old Bell crowd.

It was a great deal like your attitude toward the farm mutual company. You resented their invasion, too.

You notice, in the last few years, that Bell weapons have been more effective. It shows that bigotry and ignorance have been given a back seat.

Today, Bell affairs are handled intelligently. You will have to admit that.

The government will have a pretty good exhibit of past crimes. That was what was so hard on the Standard Oil Co. Its past record was so rotten!

Before the case is over, I am pretty sure that the old bigotry element of the Bell company will be peacefully chloroformed.

This will be necessary, because the new order of things will reveal their uselessness.

Whatever the government does, it will help the telephone company. Their troubles are purely internal.

People have ridiculed the oil and tobacco decisions, but you can bet that they solved problems which perplexed the companies. Most institutions have to be forced to do the best things for themselves.

No reader wants to get the idea that the Bell company will be wiped out. All that will be done is to put its house in order by force.

You can say what you please, but unless it is curbed legally, there is an influence still powerful which, if once again in control, would drive the Bell ship on the reef of municipal competition.

These influences have seen nothing of the desolation of the past, and are really ignorant of its consequences. If they got into control, the fun would begin all over.

I honestly believe the present constructive influences will be permanent. Constructive policies alone will guarantee future dividends. And of all enterprises, the telephone is most unique.

Even if a hostile management should again control the Bell and be given absolute financial power, it would still be helpless as a child, because each unit of its earning power is at the mercy of a lone individual and subject to his whims and tempers.

Competition organically arises from whims and tempers, too. Think of being exposed to 5,000,000 temperaments! It is the weak link in what might be a powerful chain.

No enterprise in existence is in such need of co-operation and mutuality—no one so susceptible to destructive publicity, because it has so many natural elements.

I hope the government will soon set its seal of approval upon the conduct of the telephone business.

I trust the legal necessities imposed upon the Bell will forever preclude the possibility of a crazy administration following the Vail regime.

You will be surprised to hear me say that the Vail regime has really been a constructive one. No one has so vigorously condemned the Vail management as I, because I thought he was bent upon destruction.

Today, I feel that the Vail-Morgan influence recognizes the rights of Independents to exist, and that they realize their own physical and financial short-comings.

I once believed that they ran the Bell company as a sort of a schism, but today I believe they recognize the necessities of their conditions—the need of an honest profit.

I hope the government will force the separation of the Western Electric Co. from the Bell company. And that this company will be put on its own feet to fight the game of the survival of the fittest.

The Western Electric Co. is the only source of irritation these days. Its participation in Independent sales causes practically all the bitterness. And its activities will ever be a source of destructiveness.

If the field was thrown open, and the company had to fight to retain its Bell business, it would have little time to bother Independents.

The open field would not mean much to Independent manufacturers in the way of Bell sales, but it would give them a better assurance of existence elsewhere.

As the matter stands now, it looks this way to me. The Western Electric horse may be said to have a large pasture with good grass and water, all to itself.

Across the fence is the Independent pasture not so large and there are many horses feeding there. The grass is short and the water is low—sometimes there is a scarcity of it.

The Western Electric horse, not content with his good pasture, jumps over the fence and is sharing the poore pasture with the other horses. But he knows that when he gets hungry he can jump back. The rest of us have no such assurance.

So I say that the big pasture gate should be opened or the horse withdrawn from the small pasture.

As for me, I don't believe the great financial influences want a telephone monopoly. They can make more in the free and open field. They don't ask for a steamship monopoly, nor rail, nor steel nor dynamo.

Why anyone should fly in the face of Providence in telephones alone, admits of no lucid explanation. Why not allow every telephone man the right to make a dollar and be happy? That is the best way. It gets results.

One thing positive about the telephone business is its fundamental vitality. Telephone companies have failed. But not where common sense and honesty prevailed.

I believe every failure of a telephone company can be laid to personal dishonesty, or ignorance of the business.

This government suit will not hurt our business. It will help. It will not hurt the Bell business. It will help. It will throw a searchlight on the past and guarantee the future.

We want guidance. We want to know what is right. Then we can go ahead.

The only thing which can exist for all time is truth. Let us have it.

MORAL:—The guilty flee when no man pursueth.

Argument for "Ideal" Service vs. "Universal" Service

Bell Plan for a Universal Telephone System, Owned and Operated by the American Telephone & Telegraph Co., Contrasted with What is Aptly Termed "Ideal" Service, Which Contemplates Local Ownership of Local Properties and General Interconnection

By J. C. Crowley, Jr.

For several years the American Telephone & Telegraph Co. has advertised and carried on a campaign to educate the American public in the belief that the telephone business was, and is, a natural monopoly. This campaign was started at first through the prominent magazines of the country and today almost every weekly and monthly magazine carries from one-half to a full page of advertising of the so-called "Universal System." And the intent and purpose of this advertisement does not belie itself, for Webster's definition of universal is, "to belong to the whole of the subject," and that is the object of this campaign—to bring about this so-called universal service and to own and control all telephones, telephone apparatus, telegraph, and all wires that are used commercially for this purpose, and also to control the patents and manufacture of such apparatus.

The writer believes that they will in the near future attempt to have enacted in the various states, the famous clause of Prof. Bell's patent: "We, and we only, shall control all transmission of sound or speech over any and all wires."

The president of this American Telephone & Telegraph Co. says we shall merge all competitive properties as soon as the laws are amended and we can legally do so. And surely the individual or corporation, who has the power, influence and command to amend our laws has that same power and influence to enact those measures under which they would be freer to operate and without any public supervision or control.

The public through this campaign is being led to believe that for a satisfactory telephone service it must have a Universal service. The Bell company must own and control all lines and equipment.

We only have to refer to the various companies owned and controlled in the community in which they are doing business, that are connected by contract agreements with the American Telephone & Telegraph Co. to see if this is true. These so-called sub-licensee companies buy their own telephone apparatus and materials from whom they please, although they have no assurance as to how long they will be permitted to do this. Telephone business is accepted from them and sent to them through their terminal points, and this undoubtedly has proved very satisfactory from a public convenience point of view, and remunerative to both the telephone companies interested. But universal service is limited in this respect.

Connections between the American Telephone & Telegraph Co. or its allied companies and Independent companies have only been made for one of two reasons. Either the local company had entrenched itself so solidly in the good will of the people in the community in which it existed by good service, courteous treatment and being locally owned and managed, or there was a strong Independent long distance telephone company in that vicinity.

Now then, this interconnection of telephone service between telephone companies is made voluntarily by the American Telephone & Telegraph Co., either through fear of public indignation or encouragement of competition. On the other hand, where there is no fear of competition of a long distance company, it has carried on a destructve and ruinous warfare against the Independent telephone companies.

The American public will not be brow-beaten into universal service, but it has in mind the "Ideal Service"; that service by which a man can step to a telephone and call for the party he wants in the adjoining village, town or city, regardless of what telephone company's instrument he is using or about to use, and know that the connection will be given and completed and the conversation carried on satisfactorily.

It, has been proven there is nothing mysterious about the telephone business. Independent made apparatus is working in harmony with Bell telephone apparatus where the connections are made. With ideal telephone service established the traveler may stop at his hotel and from his room he can talk to his family, regardless of what telephone company he patronizes at home. The hotel proprietor can own his own switchboard and his own telephones and can give service to either telephone company in the city or elsewhere. This is done today where the "universal system" has competition. The manufacturer can establish his own switchboard and telephones in his factory; each of his departments can be reached by out-of-town customers direct, regardless of what telephone the customer may have.

The plan is in operation where competition has forced it. The county court house can have its own switchboard and telephones and any farmers' telephone company in the county can reach the particular department wanted, even though it passes over a large part of the Bell lines. The ideal telephone service will work satisfactorily.

The adherents of universal service would have the public believe that they and they only can manufacture satisfactory apparatus. Ask any subscriber of a telephone system where competition is in operation and the reply will usually be, "Oh, the Independent telephone is clearer and more distinct."

During the present year the president of the A. T. & T. Co., in a public letter to the allied companies, said that hereafter the "universal system" would not insist on Independent connecting companies using Bell transmitters and receivers.

The reason is clear. The Independent goods must be equal and possibly superior, otherwise this concession would not have been made. And in this same letter Mr. Vail says, "This does not mean physical connection," yet physical connection means ideal telephone service.

Now this gentleman has placed his approval on Independent apparatus to be used by Independent companies connecting with his system, and by such connections with these companies has clearly shown the practicability of such connection. Why are some communities denied this right, while others enjoy the ideal telephone service?

Why Agree Sometimes and Not Always?

In a case now pending before a public utility commission where the ideal telephone service connection is being asked for by a private citizen the argument is set forth that such a connection would mean confiscation of property. Has the Bell system suffered any loss where these connections have been made by it voluntarily? If so, why are the field men of this "universal" system soliciting such contracts in communities where there is an Independent long distance company in operation? And when a demand is made by an individual association or corporation for such a connection the Bell company produces through its legal department and attorneys a voluminous brief of antiquated cases where courts have denied the petitioner the right to connect some extension telephone and others of like character, and through these antiquated precedents they have managed to avoid the inevitable hour of ideal telephone service.

But we are living in a progressive age and that time is close at hand when the universal telephone idea will be brought before some public utility commission to be weighed alongside the ideal telephone service. On appeal from the decision of such commission to the courts, the Bell will have learned that such public utility commission will be in a position to show that public necessity and convenience requires the adoption of the ideal telephone service. And the universal service idea will be set aside to accompany the antiquated precedents that have so well answered their purpose and imposed inconvenience and delays upon the public for so long.

As an illustration, we find that in the city of La Crosse, Wis., the merchants, manufacturers and hotels are enjoying ideal telephone service in some instances. The large department stores own their own switchboards and the trunk lines of both the Bell and the Independent companies terminate on the same boards so that service is rendered from any department of such an establishment to any of the subscribers of either of the telephone companies in La Crosse, or on connecting long distance lines. Hotels and manufacturers are enjoying like connections and service. The Bell has agreed to this and permitted these connections to remain in some instances for several years, simply to insure itself against any loss of long distance business either to or from La Crosse, where the volume of business might be of some consequence.

Still, in this same city Frank Winter, an attorney, a subscriber of the La Crosse Telephone Co., is now asking that physical connection be established by the Railroad Commission so that he too, might enjoy ideal telephone service, and we find the Bell saying in Mr. Winter's case: "That means confiscation of property, it is unconstitutional."

In the same state of Wisconsin, in the city of Superior, there is a large department store operated by Roth Bros. Co. Having in mind the ideal telephone service of the merchants, hotels and manufacturers of La Crosse, this store installed a switchboard of modern manufacture with telephones in each department. The People's Independent company was requested to furnish trunk line service for this private branch exchange which it did and is now serving. The Bell company was requested to furnish trunk line service to this same switchboard and it refused. After considerable correspondence the Roth Bros. Co. received a voluminous brief showing many cases where the public has asked for ideal telephone service and has been denied that right on account of the universal policy.

When the Bell company's attention was called to the fact that it was giving this class of service at La Crosse it admitted that, on account of acute competitive conditions at La Crosse, this had been done. Possibly if Roth Bros. Co. had entered into a contract with the Bell company containing a clause similar to the following it might have bought and operated any switchboard it pleased:

> The party of the first part shall not or will not, during the life of this contract, install or permit to be installed in or upon the premises of the party of the first part in the cities of Duluth, Superior, Cloquet and Carlton, or either of them, telephone stations belonging to any telephone company competing with the party of the second part and during the life of this contract shall use only telephone instruments furnished by the party of the second part at said cities, and each of them. The party of the second part, however, shall not and will not make any toll charge to the party of the first part for messages of the party of the first part between the aforesaid cities, or any of them.

This clause appears in a contract between the Bell company and the Great Northern Ry. Co., in Superior.

Why Deny Right of Ideal Service.

Why deny the public this right of ideal telephone service? A gas company does not say to its consumers that they must use a Welsbach burner or a gas range of a certain make in order to get gas. A water company does not dictate to its consumers the kind of vessels that the consumer must use, to secure water. An electric light company does not tell its consumers the style of fixtures the consumer must use. It does not say that the consumer must use a lamp of a certain manufacture. A power transmission company does not force its consumer to use a motor of a certain manufacture, nor does it force him to purchase his machinery from the company in order to use its current.

No, none of the above utilities in this day would attempt any such steps. Wherein does the telephone business differ?

The public utility commissions are empowered to say what is a reasonable and adequate transportation service, water service, gas service, electric light service and telephone service.

They have the power, too, to say what is a reasonable rate for such service rendered. They can pass upon the efficiency of the apparatus used for these services. They have the power to say when such connection shall or shall not work an irreparable injury to the properties involved.

Public convenience and necessity demand ideal telephone service and the longer the Bell attempts to supplant it, the longer it is fanning the spark of government ownership of telephone properties. When that day comes, and perhaps not till then, will "Universal Service" admit its water-logged condition.

Asks Permission to Issue Bonds.

The New York Public Service Commission has heard the application of the Northwestern Telephone & Telegraph Co. for authority to issue $11,000, in 5 per cent. twenty-year bonds. The company is located at Carthage, N. Y., and the proceeds of the bonds are to be used for a new exchange and switch board, extension of its lines from Harrisville to Benson Mines and a new toll circuit between Carthage and Black River. Charles E. Norris, deputy excise commissioner, appeared for the applicant company.

Department of Railway Telephony

The Second of a Series of Articles on Telephone Train Dispatching Takes Up the Question of Circuit Designing—Various Kinds of Circuits and Their Advantages and Disadvantages—A Discussion of Overhead Wire Crossing of Railroad Tracks

Design of Circuits for Telephone Train Dispatching.

By John A. Kick.

In Fig. 1 are shown the details of a selective signaling circuit where the dispatcher is on one terminal of the line.

Methods of arranging the signaling circuit where the dispatcher is located at an intermediate point on the circuit are given in Fig. 2*a* and 2*b*. Fig. 2*a* shows a separate battery for each direction and provides a means for operating the two circuits separately by having a second master key position multiplied in the local circuit of the signaling relays. In Fig. 2*b* is shown a means for keeping the main battery to a minimum as well as allowing the simplex facilities to be used in both directions. By these two methods the selectors, east and west, can be numbered from one up or in other words, the number of selector keys may be reduced as each key will ring two stations and the time interval of ringing is also lessened.

The amount of impedance in the battery circuit is a question of judgment as is also the condenser capacity to be placed across the line. The impedance should be sufficient to prevent a noticeable drop in transmission with the signal relays closed while there should be capacity enough to cut down the audible signal impulses to a point where they will not interrupt the telephone service or annoy the dispatcher. It is not advisable to attempt to reduce these impulses below a certain point, as

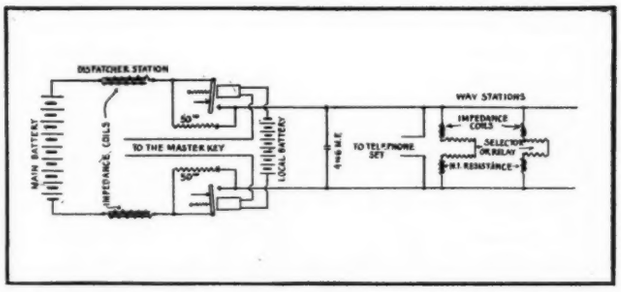


Fig. 1. Selective Equipment Only, Dispatcher at Terminal.

the dispatcher and operators quickly learn to detect minor troubles by the indications from these impulses which become irregular, excessive in volume or the opposite, or by their entire absence.

The type of signal relay is important, especially on high speed systems, and while special relays have been designed and extensively used, none of them appears to be better than, if as good as, the standard telegraph relay wound to 30 or 35 ohms when given about 85 to 100 milliamperes of current.

The signal relay should be quick acting, operable on a wide variation of current and be easily and positively adjusted and the relay previously mentioned appears to fill these requirements. The relay points should be bridged with condensers in series with a low non-inductive resistance to prevent sparking and welding.

The dispatcher's telephone equipment and the telegraph simplex equipment as indicated in Fig. 3 at *DT* and *SX* are on the line side of the signaling equipment. It is good practice to arrange the several equipments on switches or a test panel so they can be separately removed for test or to clear troubles.

A split simplex arrangement, as shown in Fig. 4 serves to provide a low resistance telegraph circuit, the relays being made up in telegraph transmitter form. In fact telegraph transmitters have been used in some installations. The standard telegraph transmitter is not as quick in action as it should be for this service, therefore, several special designs are to be had and are more effective.

There is an objection to this type of simplex where high speed systems are used, as the introduction of the trans-

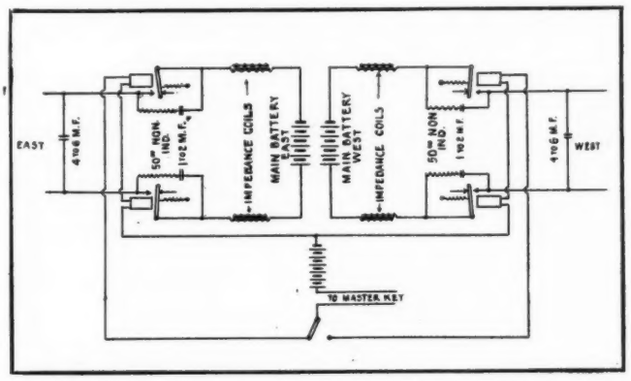


Fig. 2a. Dispatcher Intermediate, Using Two Sets of Batteries.

mitter changes the form of the wave of the impulses and disarranges the time constants to a considerable degree by reason of the make before the break, necessary to maintain a continuity of the simplex circuit. In the circuit at *NI* it will be seen that a resistance is introduced to prevent an absolute short circuit on the battery at the moment of make before the break, otherwise there is an abnormal current rush and heavy sparking at the points at the time the battery is shorted. The lowest safe and economical resistance used in that part of the circuit is about two ohms per cell of battery, around which the shunt operates. In fact, there is a constant loss in this type of simplex and the resistance in the telephone circuit is constantly changing.

For high speed signaling, the split simplex relays must be perfectly adjusted or the selective signals will seriously break

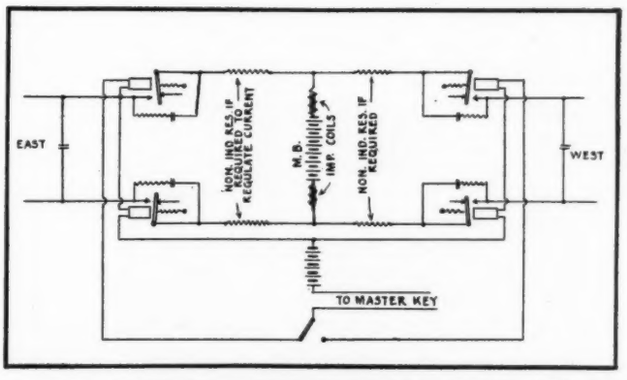


Fig. 2b. Dispatcher Intermediate Using One Main Battery.

over into the telegraph circuit. They can at any time be detected by pulling the telegraph relays up when the working margin is thin.

The other form of simplex, wherein an impedance coil with a balancing non-inductive resistance is bridged directly across the line, is much more reliable, constant in resistance and can

be readily removed without disturbing any part of the telephone equipment.

On most selective circuits the straight bridge simplex may be quite low in resistance without a considerable circuit

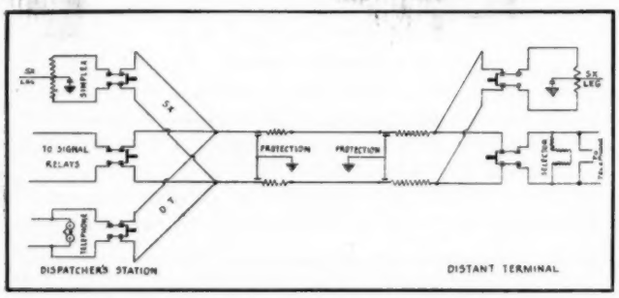


Fig. 3. Details of Terminal Test Switches.

change to the selector. In fact a 1,000-ohm simplex coil on each terminal only requires a few additional cells of battery to compensate for the signaling current taken by the simplex bridges. With a 1,000-ohm coil at each terminal and 150 miles

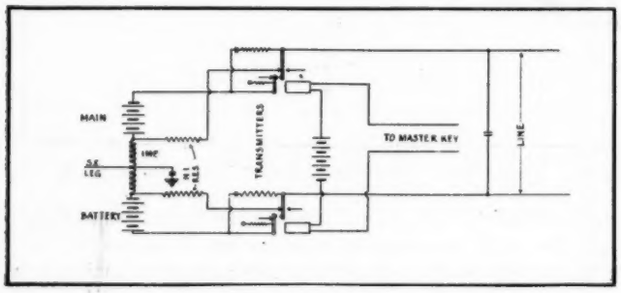


Fig. 4. Low Resistance Simplex Circuit.

of line wire of 210 lb. copper, the total resistance of the simplex is approximately 850 ohms, so low that two such circuits can be worked in tandem duplexed on a 90-volt battery with plenty of margin.

Fif. 5 shows a branch circuit working with repeated signal and transmission. It is advisable to repeat at the junction point if the simplex is to be used on either the main line or branch.

(To be continued.)

Crossing Railroad Tracks with Overhead Wires.

The smaller telephone companies and a number of the larger companies, with well organized engineering and

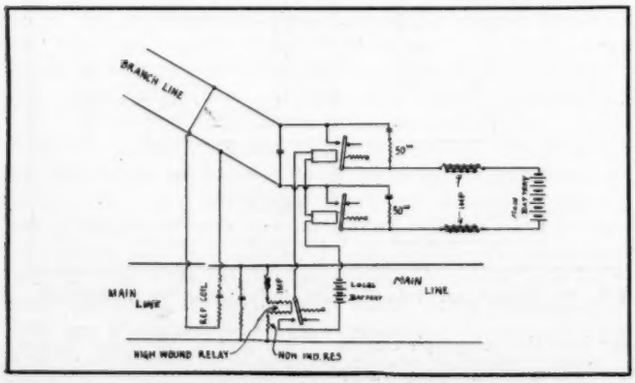


Fig. 5. Circuit for Branch Repeaters.

plant departments, do not appear to recognize the importance of substantial pole line construction at points where wires cross over railroad tracks.

The majority of states have passed laws governing wire crossings, with particular reference to clearance above the top of the rail and also minimum distance between poles and the rails. Observations in the Central West, show that approximately three-fourths of the telephone lines are not constructed to comply with these laws, especially in the matter of overhead clearances.

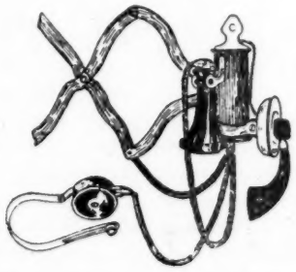
The Illinois law requires that telephone wires, suspended across railroad tracks, be placed at least 25 feet above the top of the rail. This plan is beneficial to both the telephone and the railroad company; the telephone company gains by having its wires practically out of range of steam and smoke from the locomotives, thus increasing the life of the wires.

The gain to the railroad company is principally in the matter of safeguarding its employes; low wires materially increase the hazard to the freight conductor and brakeman, whose duties at times may require him to ride on or walk over the tops of the cars.

Telephone wires also frequently break down, and in addition to hanging over the track, they come in contact with the railroad wires. Since the latter usually carry from 150 to 300 volts, contact with these wires is liable to disturb some of the telephone company's apparatus as well as interrupt the service on the railroad wires. The latter invariably results in delay to train movement. Where only one or two wires are in service, the placing of the wires under the tracks through pipe or conduit, would eliminate all possibility of damage to the equipment of the telephone company or delays to train movements.

An Unusual Service Problem.

One of the subscribers having a special line is a paralytic, and, except for being able to move her arms a little, is utterly helpless, and lies in bed constantly, says a correspondent of the New England Telephone Topics. She wanted some arrangement whereby if she should be left



Telephone Arrangement for a Paralytic.

alone for a while she could call "central" if anything happened, and so feel more at ease in the knowledge that she could immediately get in communication with the outside world.

The problem was solved by first supplying a head receiver, then fastening a collapsible swing arm to the head of the bedstead; but in order that the subscriber might talk into the transmitter, it had to be lowered to the bottom part of the arm and a piece made so that a regular breast transmitter mouthpiece could be used, as shown in the sketch. An electric light switch of the pull type was also fastened to the bed, and the cord from it looped around the invalid's finger. This switch is in the transmitter circuit, and is normally closed and is not used unless the patient is to be left alone. In this case the attendant puts the head receiver in place, opens the switch, and leaves the receiver off the hook.

When the subscriber wishes to call central, she pulls the string closing the switch, and when through talking, pulls it again, opening the circuit.

Practical Subjects—Letters and Discussions

Advertising Telephone Service in Minnesota.

In a parade held recently in Jasper, Minn., a float of the South Dakota Rural Telephone Co. took a prize as one of the best floats in the line. The float, which is shown in the illustration, was planned by Theo. Holien, the secretary-treasurer of the company, who had but a limited time for the work which was used to excellent advantage.

A Model F, Buick automobile which is used for construc-

The Automobile Supports the Entire System.

tion and line work, was pressed into service and an exceedingly interesting and effective telephone exhibit was produced.

J. B. Nelson, who drove the float, is vice-president of the company and has been connected with it for the past seven years. Theo. Holien, who is also proficient with the typewriter, was one of the organizers of the company some ten years ago, when it started out in the same way as many others—some of the lines being placed on poles and some on the fences.

At the present time, the company operates four local exchanges having 39 rural lines and has over 850 subscribers. In addition to its own exchanges, it has connection with ten different towns over its own wires.

An Unusual Drop Trouble.

A rare case of trouble occurred on our switchboard, which might be of interest to others. We have a magneto system with code ringing on party lines. On one line the shutter hook would stay up at the first impulse of a ring and the operator could not tell whether it was a single ring for central, or a code ring on the line. The trouble was found in a little notch that was worn in the top of the shutter hook, where it struck against the part of the metal frame above it. The notch was just deep enough to hold the hook against the frame when thrown there by a strong ring. A touch of a file corrected the trouble.

Wakeman, Ohio. F. E. Weeks.

Some Notes on Storage Batteries.

In a recent issue of The Southwestern Telephone News, Louis Rosenburg gives some pointers on storage batteries and their care.

In a fully charged storage cell both plates have a maximum amount of active material, lead-peroxide on the positive plate and pure spongy lead on the negative plate. The electrolyte is as its greatest density and the hydrometer shows the greatest specific gravity reading.

As the cell discharges, i. e., as current is taken by the exchange, the active materials of both plates change into new substances called lead-sulphate, and the electrolyte loses acid and becomes weaker. The amount of the active materials that are converted and the loss of this acid are exactly proportional to the amount of electricity delivered by the cell. Therefore the decrease in the specific gravity (density) of the electrolyte is an exact index of the state of charge of a storage cell. The color of the plates change during discharge and the attendant will do well to observe this change in color because the color is a pretty good indication of the condition of storage battery plates.

After a storage cell has been discharged, either completely or partially, as desired, it is again "charged;" i. e., an electric current is passed through the cell from an external source, as by means of a generator, to restore the storage cell to its original condition. The charging current reduces or reconverts the lead-sulphate which formed on discharge into lead-peroxide on the positive plate and pure spongy lead on the negative—two different substances are made—and returns thereby to the electrolyte, the acid that was removed on the previous discharge. The amount of acid so returned is directly proportional to the amount of charge and hence the variation in the specific gravity is again the index of the state of charge of a storage cell.

It is of the utmost importance that the electrolyte in a storage battery be as pure as practicable. There are two reasons for this: first, because certain impurities such as iron, copper, platinum, etc., cause an internal discharge within the cell, which diminishes its capacty; and, second, because other impurities such as nitric acid, corrode the plates and cause their disintegration. When a storage battery is first put up, new electrolyte is used that comes easily within the requirements for purity. Hence the impurities that get into the batteries are due either to their accidental introducton, but more frequently to the fact that the water which is used daily to replace evaporation is not of the requisite purity.

The introduction of impurities is, therefore, cumulative and ultimately reaches the danger point. For this reason only distilled water should be used to replace evaporation. The battery attendant should be ever on guard as to the water he buys for this purpose, making as sure as possible that the water is what it is represented to be. I believe he would do well to make occasional visits to the distilling plant to see what precautions are being taken to keep the water from contamination.

A special word of warning should be given for cases where water is obtained at ice factories. Ammonia fumes are very penetrating, and the absorbing power of water for ammonia fumes is very high, so that distilled water in such cases often absorbs ammonia. When this water is put into the batteries, the ammonia becomes converted into nitric acid, and as mentioned above, nitric acid is an impurity which attacks the plate—grid and material. In fact, nitric acid is one of the worst impurities of this class, and for this reason special emphasis is made of this point.

All the cells in a battery used as a single unit should behave exactly alike. Although it might be desirable to take readings on all the cells, in order to get a much better check on the operation of the battery, it effects a greater economy to take readings only on one cell—called the pilot cell—and supplement with certain other readings as called for on the report form. For this reason, it is of the utmost importance that attendants should take as much pains as necessary to obtain accurate readings.

Serious errors might creep in if the attendant does not take certain precautions; if the level of the electrolyte is not the same when taking charge and discharge readings on successive days, a large error may creep in because a slight variation in the height of the electrolyte may correspond to several points in gravity; if the readings on the hydrometer are taken with the eye higher at times and lower at times, an error of a point or so will creep in on this score; if the attendant does not stand exactly in front of the switchboard meters when reading them the error may be quite large; an error will creep in when the readings are taken promiscuously by different men, although this will in general be only slight. It is of the utmost importance that the level of the electrolyte especially in the pilot cell, be maintained exactly at the same point.

No comment is really required on interchanging electrolyte, as every attendant undoubtedly knows that to interchange electrolyte among the cells not only destroys completely the record of that battery, but it covers up, for the time being, trouble that may have arisen. The attendant should bear in mind that the records he makes are not for the purpose of "checking him up," but they are for the purpose of insuring that battery against failure. There is but one difference between a life insurance policy such as you take out and this kind of insurance; in the former the man insures his estate financially in the event of death before he has been able to leave provision for his family, but in the case of a battery, the daily insurance policy is taken out to prolong its life—something a life insurance policy cannot do!

If the battery plates are not exposed to the air, and if no impurities get into the electrolyte, the life of the battery depends on these three factors. Charge and discharge properly—that brings long life to a battery; charge and discharge improperly—and the battery loses life gradually, but surely. I should say that batteries ought to last no less than fifteen years if handled properly, and by handling properly I mean just three things:

1. Discharge; 2. Charge; 3. Overcharge—to the specific gravity limits specified for each battery.

Overdischarge produces sulphating—the most serious fault—for aside from the fact that sulphating may go so far as not to be curable, slight sulphating (which is curable) causes loss of capacity and much waste in charging current. More damage results from overdischarge than excessive overcharging. In the latter case much, very much, current is wasted and the plates also suffer. Hence, it is that we have a "regular charge point" as several points below the overcharge point.

Line Built, but No Legal Right of Way.

A case has just been decided in our county court in which a point was established which is of interest to telephone companies.

Our company endeavored to obtain the right of way for a line along the highway which runs through the farm of a married woman. We failed to get the right of way. A section of Ohio statutes provides that telegraph (telephone companies later included) companies have the right to build lines along the highway. Another section provides for appraisers to be appointed by the county commissioners. A decision of the supreme court has overruled this, but we were unaware of it.

An attorney advised us to proceed to build the line in the usual way and if the owner's husband offered any threats of violence (which he had previously done) to have him arrested. Acting upon our belief in our rights under the statute and the advice of the attorney, we proceeded in the way usual with rural companies.

The parties who were to have the use of the new line and some of their neighbors, headed by the president of the company began to set poles. The husband attempted to strike the president with an ax, was overpowered by the president and the work stopped. The husband was arrested and taken to the county seat, but obtained bail and returned to his home about midnight. In the evening another lot of men and boys, not employed by the company, built the line, notwithstanding the objection of the woman who owned the farm.

The husband sued twelve individuals for damages, in two cases, alleging conspiracy and false arrest in one, and personal injury in the other. The first case was tried and the verdict was for the defendants. The wife filed two suits, for damages, one against those who attempted to build the line in the day time and the other against those who built it at night, the cause of action being the same in both, viz., malicious trespass. She claimed injury to her health and damage to property.

The case against the "night riders" was tried and she obtained a verdict for $210. The court charged that if the jury considered there was no actual malice, and that if the defendants acted in good faith, believing they were acting in a lawful manner, no verdict for exemplary damages should be returned. The court allowed a set of interrogatories to be given to the jury for them to answer, covering all points of a possible verdict.

They found $10 damage to property, no injury to the health of the plaintiff, yet fixed the sum of $200 as exemplary damages. Our attorney filed a motion to set aside the last. In his brief he quoted many decisions of state supreme courts and one of the United States Supreme Court, upholding his position that no exemplary damages could be recovered where actual malice was not proven.

The trial judge has just rendered his decision upholding our attorney and fixing the judgment at $10, with costs of trial adjudged against plaintiff, as we had made an offer of $25.

This leaves the telephone company with a line built, but with no legal right to keep it there or to repair it. What the outcome will be is in the future. A condemnation suit, at a cost of probably $150, to obtain right of way for ten poles, is expensive.

Wakeman, Ohio. F. E. Weeks.

A Library for Operators' Use.

The Poplar (Philadelphia) central office force has reason to be proud of its position among the city offices, in the fact that it is the only one possessing a library, says The Telephone News.

The credit is due to Miss L. F. Kugel, chief operator, for the idea, and to the operators themselves for having put the suggestion into practice.

There are now 125 books, of which all but about fifteen were given by the operators. The others were presented by friends interested in the project. A bookcase, mission style, to match the room fittings, and attractive markers, have been provided.

The library committee, consisting of two supervising operators and two regular operators, has as its duty the approval of newly purchased and presented books.

There are no dues. Each operator is allowed the privilege of reading the books at any time. They can take them out, however, only on Wednesdays from 10:30 a. m. until 1:30 p. m., at which time a librarian is on duty. Books may be exchanged each week or may be kept out two weeks. The customary fine of a cent a day will be made if books are retained beyond the fourteen day period, and the money will be used to purchase additional books.

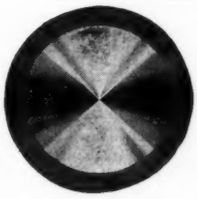
The popularity of the plan has already become evident, and every Poplar operator is proud of this additional office privilege.

You wouldn't put your money in the bank if it simply paid interest for a number of years and the capital itself disappeared.

That's what happens when you buy galvanized ground rods for they soon rust and have to be replaced.

Copper Clad Ground Rods Do Not Rust.

Isn't it good judgment to make your investment permanent by installing such a rod? For the telephone field we're making special size ground rods at the following prices:



	Weight per 100 Rods.	Cost per 100 Rods.
3-8 inch x 5 feet	200 pounds	$20.00
3-8 inch x 6 feet	240 pounds	24.00
3-8 inch x 7 feet	280 pounds	28.00

Shipment the day we get your order.

DUPLEX METALS COMPANY

TRADE-MARK "WELD CLAD"

CHICAGO OFFICE 853 Peoples Gas Building

Chester, Pennsylvania

NEW YORK OFFICE 30 Church Street.

INTERESTING NOTES ON CONDENSERS

In the early days of telephony, Condensers were invariably built up from solid tin foil and waxed paper. Such Condensers are, however, apt to break down and become crossed or short-circuited, especially under modern conditions.

A grit in the foil or a pin-hole in the paper is sufficient to cause a breakdown, and the defect can seldom be made good because the two foils become welded together by the current passing through the fault. Occasionally the weld can be burnt out by a strong current, but this generally damages the Condenser seriously, because the solid foil is of appreciable thickness and requires a heavy current to fuse it.

The minimum thickness of foil commercially usable is determined partly by the high cost of rolling the metal, and partly by the difficulty of handling extremely thin foil. Consequently, the foil commercially used is much thicker than is called for by the electrical conditions.

The ideal conditions of an extremely light and thin film of metal, combined with considerable mechanical strength, seem therefore to be impossible of attainment; but, nevertheless, the apparently impossible actually has been attained, and as the result, the manufacture of Condensers is being revolutionized.

The solution of the problem was found by the English telephone engineer, G. F. Mansbridge, who conceived the idea of employing for Condenser work a specially prepared metallized paper, i. e., a paper upon which is deposited an extremely thin film of pure tin, forming an even and continuous conducting layer in absolute contact with, and inseparable from, the paper.

In this combination, the paper provides the necessary mechanical strength, and the thin film of tin the conducting electrode. The thickness of this film is such that, whereas there is ample conductivity for all telephonic currents, there is so little mechanical strength **in the film alone** that it instantaneously shrivels up if subjected to currents greatly in excess of its normal carrying capacity.

This property of shriveling up under excessive current is of great value, since a Condenser made from such material (known generally as a **MANSBRIDGE CONDENSER**) is rendered absolutely proof against breakdown from internal crossing or short-circuiting. If an internal short-circuit be accidentally or purposely produced, the Condenser at once begins to discharge itself across the point of short-circuit and the momentary current concentrated at this point is strong enough to shrivel up the conducting film **immediately surrou**nding the point.

By this **localized** shriveling up, the film isolates itself from the point of breakdown, and the insulation of the Condenser is preserved, since the heat developed by the transient current is insufficient to scorch the paper.

This automatic sealing of the breakdown point may be repeated thousands of times, and still the Condenser will retain its capacity and its insulation.

So instantaneous is the sealing that, if a pin be driven into an insulated charged **MANSBRIDGE CONDENSER** so as to cause a short-circuit between the electrodes, the rush of current to the puncture will seal up the defect before the Condenser has had time to do more than partly discharge itself. A dozen or more such punctures may be made before the Condenser becomes discharged.

Just as a **MANSBRIDGE CONDENSER** seals up when punctured by a pin, so does it seal up, automatically and instantaneously, when the puncture is due to a lightning discharge or other high tension current; and it is because of this remarkable and permanent immunity from breakdown that the Condenser was named by its users the **MANSBRIDGE DREADNOUGHT CONDENSER.**

Besides possessing this valuable and unique property of automatic sealing, **MANSBRIDGE CONDENSERS** are cheaper, smaller and lighter than those made from solid foil; and they consequently are forcing their way to the front and becoming **the accepted standard everywhere.**

They have been adopted exclusively by the English government Telegraph and Telephone Administrations; and they are made under license by Western Electric Company, L. M. Ericsson Co., Electric Specialty Co., Stromberg-Carlson Co., American Electric Telephone Co., and by numerous other licensees all over the world.

Insist upon having MANSBRIDGE CONDENSERS and save money in first cost, and also in maintenance.

For further particulars and for terms of manufacturing license in U. S. A. and Canada apply:

G. F. MANSBRIDGE, Mount House, New Barnet, England

Stopping the Leaks Often Found in Telephone Plants

Superintendent of Exchanges for Federal Telephone & Telegraph Co., of Buffalo, N. Y., Takes Up in Detail Many Ways in Which Money, Time and Energy are Wasted—Some Helpful Suggestions from One Fully Competent to Deal With His Subject

By H. M. Dixon

This is a subject to which we can give a great deal of thought and the more carefully we think about it, the more leaks we can discover. If the plumbing of an establishment was leaking we would try to stop it and then call the plumber to fix it. In our business we have this difference, each one of us in our own department, or as manager of an exchange, has to be his own plumber and, although there may be departments or other exchanges that have leaks, all of us should look at our own departments and see if we can find leaks for which we are directly responsible.

There are a number of different kinds of leaks, such as income leaks (loss of business already obtained and loss of business that we do not get), but we will pass over such leaks and take up a few of the expense leaks as follows:

A. Petty expenses; b, material; c, stationery; d, service; e, labor.

Petty Expenses.

Petty expenses are insignificant items when taken singly, but, in the aggregate, when we consider all our properties, they amount to thousands of dollars. How are we to judge proper petty expense? Do we think twice before purchasing, or authorizing a purchase of these small things? Would not our work be just as efficient and could we not get along without incurring some of these small expenses? If, however, we decide they are not only necessary expenses but imperative expenditures, do we get the best prices possible and are we business men shrewd enough to secure rock bottom prices for purchases and not allow sellers more than fair profit? This is good business and successful business men of today either are shrewd buyers or employ such a man to do their buying. Many dollars can be saved in a year by investigating and shopping.

Livery is an item of expense which is used very extensively in our business. Are we using livery to the best advantage? Do we plan our work in connection with this expense so as to make the least possible use of livery to efficiently accomplish our purpose? Do we do our rural collecting at times when we are using livery on rural trouble, or do we thoughtlessly spend a *lot* of money for livery to get a *little* money on collections when the collecting could all have been done in connection with other work or by other methods?

Much expense can be saved by making one trip do all the work necessary in the country. Do we carry enough material to thoroughly repair a break when going on trouble so as to save an extra trip to this point? A great deal of livery expense can be saved by careful forethought and planning.

Material.

Very few of us realize the real value of material used by us, and, for this reason, it is very easy to create "leaks" in the material expense question. Do we carefully count and look over all the material received by us and, at the same time, report it carefully to our supply department? The department of supplies has no other means than our report on which to pay for this material, and we have to be the watchmen to see that the company gets what it pays for. A close scrutiny of all goods received may be the means of stopping a "leak."

How about our surplus stock? Are we carrying more than necessary for our immediate needs and thereby causing the loss of considerable interest and deterioration because of a large investment lying idle? Careful scrutiny of the contents of our storerooms, coupled with the knowledge of its value, may surprise us, and, at the same time, be another means of stopping an unnecessary "leak" of expense.

Are our stockrooms in order and how do we handle our material? Do we keep it in order, clean, packed up, and do we use it in the most economical manner possible? Also do we use it all, or do we leave some at the place where we were working? Are we careful that we do not leave a few insulators at the foot of a pole, or a part of a coil of wire in some subscriber's cellar or along the road, and do we see that all stock, unused, is returned to the storeroom for safe keeping? Many of us are careless in this regard without intending to be, and this carelessness means money lost.

Are we always as careful about the care and repair of apparatus as we are about the care of money entrusted to our safe keeping? Do we use all possible parts of apparatus, etc., and repair what we can, or do we, because one part of an instrument or piece of apparatus needs attention, condemn the entire outfit? Careful and studious attention to apparatus, and odd time labor put on repairs, will save the company labor, express, cartage and even subscribers. In other words, it will plug another "leak" or many of them.

Stationery.

Printing and stationery are very expensive, and, at the same time, among the most destructible articles used by us. Dust and careless keeping waste many dollars' worth of stationery in a year, and in a large company, the printing bills are enormous. Are we all doing our part to use it as economically as possible and do we have a proper place to keep it? Some of us perhaps, may let it get scattered around and become unfit for use. When we order stationery do we stop and figure out the smallest quantity needed for our use? A big stock of forms is a very hard thing to take care of and is liable to get dirty or misplaced before used. Small stock, kept neatly and in order, will put a stop to a larger "leak" than is surmised.

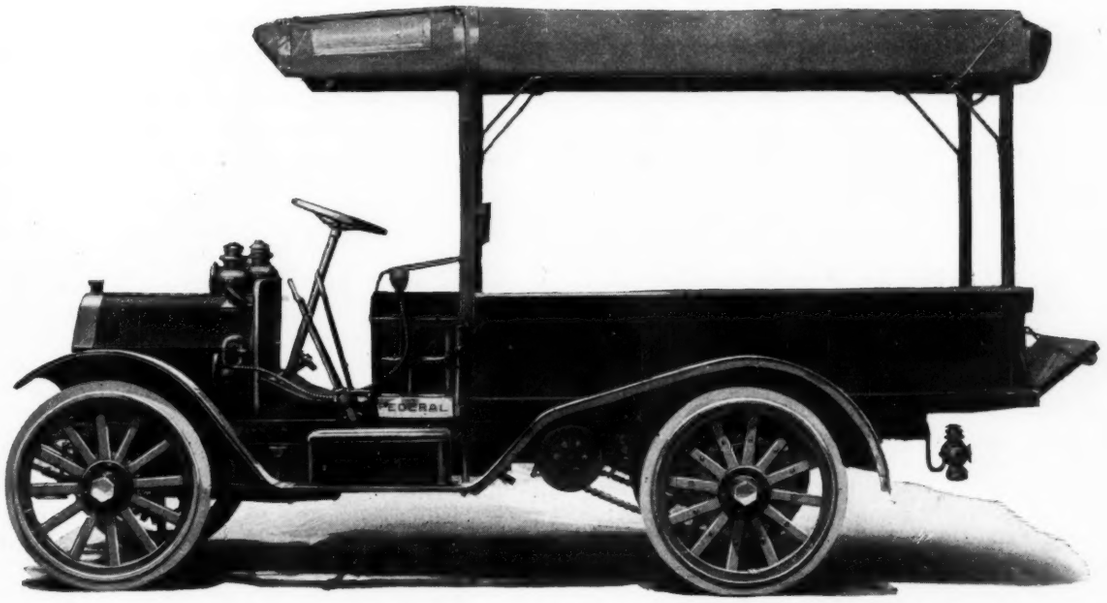
Service.

Poor service and lack of courtesy to subscribers may not show up immediately, but a little lack of vigilance, especially on the part of those who deal directly with the public, will in a very short time start a "leak" of income by the loss of subscribers and the loss of long distance business; so it behooves each one of us to be ever on the alert and give the best we have, and even throw in a little extra, so that a "leak" of this kind will not happen. Especially on long distance service there are so many little things that can be done. We all concede it, so let us watch for our chance to help improve the service. Team work of our operators, and team work of our operators with operators of another exchange, is a suggestion to help our long distance service, and personality goes a great ways in promoting team work.

Labor.

A great deal might be written on this subject of leaks of labor, but let us dwell on one or two details. Have those of us who lay out and supervise labor, investigated the du-

THE FEDERAL
ONE TON TRUCK
$1800



Federal one-ton chassis, including seat, $1,800. Body type at purchaser's option. Wheel base optional—100-inch or 144-inch. Motor, 4 cylinders, 30 horsepower. Magneto, high tension, clutch 16-inch cone. Transmission three speeds forward and reverse. Tires, solid, 36 x 3½ inch front and 36 x 4 inch rear. Timken bearings.

Valuable Facts For Every Telephone Company in America

No telephone company can afford to be without these facts.

They mean increased business and increased profits to those who ask for them.

Your customers will benefit greatly by your having them.

Your lines will always be in working order—your men always at work.

They are yours for the asking. Send for them today.

A Few Federal One-ton Truck Owners

Portland Railway, Light & Power Company
Detroit United Railway Company
Hupp Motor Car Company
Krit Motor Car Company
American Bank & Note Company
F. C. Folson, Cartage Company
Abbott Motor Car Company

The Federal Motor Truck Company, Detroit, Michigan

New Factory, Dept. H. **Leavett and Campbelle Avenues**

ties of each employe and is their time spent economically? There are many classes of labor. One often finds men doing twice the work of other men of the same capacity. without greater exertion and without complaint. On analyzing the method employed by these two different men, it is found that the man who does the most work is the one who has the most active brain and the best understanding of the things he does. He thinks quickly and his body responds quickly to his thoughts; he determines what is the thing to do and immediately sets about to do it. Upon the completion of one piece of work, he immediately has in mind the next piece of work to do, and immediately sets out to accomplish it. At the end of a day's work, he is found to have been busy every moment during the day and to have accomplished much more than the man who is undetermined as to what he is to do and stands about and thinks either of the work in hand or of something else.

There are good men incapable of the origination of ideas, and it should be the duty of managers, superintendents and foremen to think carefully for such men and educate themselves to lay out the work sufficiently far in advance, to have a knowledge of the thing to do at the moment, so it can be done quickly, with the next piece of work immediately ready for their attention.

All of us can very easily keep busy, but how many of us can truthfully say that our work today accomplished everything it should have? It is not necessarily "long hours" that will prevent "leaks" of labor, but systematic, efficient work while we are busy, and the manager whose duties are so varied has to be very watchful that results are forthcoming, and see that a thing once done is well done, and a labor "leak" is not occasioned by this particular piece of work having to be gone over again.

Each one of us can, by giving this subject of leaks a systematic study and investigation, find something somewhere, which, corrected, will add efficiency to the department and help in the success of the company by decreasing its expenses, and stopping one or more of these expense leaks. Look for the little leaks before they get to be big ones.

Visiting Member Privileges with Foreign Societies.

For some time past the board of directors of the American Institute of Electrical Engineers has desired to promote closer relations between the institute and foreign electrical engineering societies. The advantage of a closer understanding was especially felt last year, when so many institute members went abroad to attend the International Electrical Congress at Turin, and the meeting of the International Electrotechnical Commission. On receiving the report of Gano Dunn, who as president of the institute, headed its delegations to both of these meetings, the board, feeling that it would not only promote mutually. the convenience of visiting engineers both to this country and abroad, but would also increase the friendly relations which are constantly growing through the activities of the International Electrotechnical Commission and other similar agencies, passed the following resolution:

> Resolved that the president is authorized to communicate with certain leading foreign electrical engineering societies with respect to establishing mutual visiting-member privileges for a limited term, with the end in view of contributing to the convenience of our own members visiting foreign countries, and, in return, affording corresponding conveniences to members of foreign electrical engineering societies visiting the United States, and of increasing the friendly relations between American and foreign electrical engineers.

Accordingly, a number of European electrical engineering societies were communicated with by President Dunn, and the following have cordially accepted the institute's proposals to enter into reciprocal arrangements for the mutual benefit of the members of the respective societies: Institution of Electrical Engineers (Great Britain) Verband Deutscher Electrotecniker (Germany), Societe Internationale des Electriciens (France), Associazione Elettrotechnica Italiana (Italy), Koninlijk Instituut van Ingenieurs (Holland), Association Suisse des Electriciens (Switzerland). The Svenska Teknologforeningen (Sweden) will take up the question at the meeting of its governing body in the fall.

The arrangements entitle members of the American Institute of Electrical Engineers while abroad, to the privileges of members of the societies designated, for a period of three months, and foreign members visiting this country are entitled to the privileges of institute membership for a like period.

To foreign engineers visiting this country it is proposed to give, upon presentation of proper credentials, letters of introduction to institute members and to officers of manufacturing and operating companies; also to place at the disposal of visitors the facilities of the library, in which are a large number of books in foreign languages, and the reception, reading and writing rooms at institute headquarters. Visitors may also have their mail received and forwarded. In cities where there are institute sections, the local officers can contribute greatly to the success of the plan by giving information and assistance and desired introductions wherever possible.

Although it is not probable that the number of foreign visitors who will avail themselves of these privileges will be large, the opportunity to do so will often be of considerable convenience; and at the same time it will afford to the institute, a means of expressing a welcome to foreign members.

There has been prepared for the use of institute members while abroad, a form of certificate to be signed by the secretary, which will serve as credentials from the institute to foreign societies. Any institute member in good standing intending to go abroad, may obtain such certificates upon application to the secretary, a separate certificate being necessary for each foreign society.

The visiting member privileges involve no expense, either to institute members, or to foreign members, and the advantages which they offer has commended them to the favorable consideration of all the organizations concerned. They are undoubtedly a step towards bringing the electrical engineers of Great Britain, Europe and America more closely together.

Novel and Ingenious Uses for Telephone.

System, the Magazine of Business, recently contained two interesting short articles on novel uses of telephones. Both are printed under the general heading "Short Cuts," a department which treats of newly found methods of saving time, effort or money.

The first article, having the caption "A Telephone Store Within a Store," tells of a retail grocer in an eastern city who has partitioned off a portion of his store and has stocked the space with goods usually called for by telephone. The order telephones are located in this room, and during the rush hours of the morning two clerks attend exclusively to handling telephone orders. The grocer has placed himself on record to the effect that his idea has resulted not only in the saving of time and space in filling telephone orders, but in avoiding confusion in the preparation of such orders for delivery, and in saving the main store from congestion consequent upon filling these orders during the rush periods.

Another point brought out is that the two clerks employed in this room soon become familiar with the established telephone customers, and by learning their peculiari-

Why a Dart Truck?

Why?

Because it meets your requirements for telephone repair work more satisfactorily than *any other* truck on the market.

Because it starts easily, runs quietly, pulls powerfully—*never gets "stuck."* Because mud, sand and hills are never too serious an obstacle.

Because the Dart is economical in *upkeep* as well as in first cost. A Dart recently ran 1116 miles during a month's time with an average load of 1400 pounds at a *total upkeep* of $13.61.

Because the experience of Mr. Reader as shown in the letter here would be *your* experience if *you* owned a Dart.

It has come to be looked upon as axiomatic that the Dart is ***"Bought by those who know what's best."***

It will reduce your expenses, improve your service, increase your subscribers' satisfaction.

Isn't that what you want?

Delavan, Wis., Aug. 1, 1912

The DART Some six months ago, I purchased an Auto Truck machine, called the "Dart", from Mr. Hebbe, of Delavan, who is Agent for them.

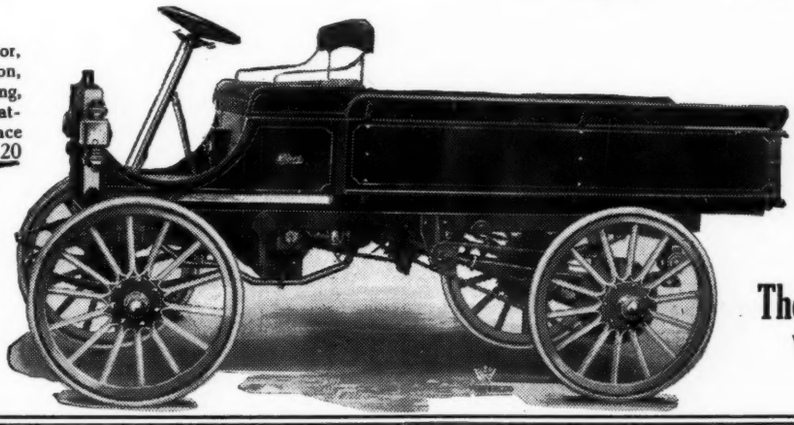
11,000 miles and never "stuck" I have used this machine every day since, thru all kinds of roads, up hills and down, running it on an average 75 miles a day, and have never been "stuck" yet.

Not a cent repair To its full capacity 1500 lbs. I have not paid out a cent for repairs so far, and generally carry from 1000 to 1500 pounds on my regular trips.

Heartily endorsed I can cheerfully recommend the "Dart" to any one as a good reliable truck.

(Signed) A. H. Reader, Delavan, Wis.

Full 20 H. P. motor, planetary transmission, pump, and splash oiling, Remy magneto and batteries. Loading space 45"x78". Speed 3-20 miles per hour.



Our canvass top job at $790.00 is ideal for delivery of supplies, while the open express type is best on line and repair work.

1500 lbs. Capacity

Our latest catalog is yours for the asking. Write for it today.

$750.00

F. O. B. Factory

The Dart Mfg. Co.

Waterloo, Iowa

Dept. T

EVERSTICK ANCHORS

Anchor Closed

Anchor Expanded

Have the greatest holding power. More "Eversticks" used than all other patented anchors. *There's a reason.* Write for literature.

Everstick Anchor Co.

ST. LOUIS, MO.

COMMONWEALTH HOTEL

INC.

Opposite State House,

BOSTON, MASS.

Offers rooms with hot and cold water for **$1.00** per day and up, which includes free use of public shower baths.

Nothing to Equal This in New England

Rooms with private baths for **$1.50** per day and up; suites of two rooms and bath for **$4.00** per day and up.

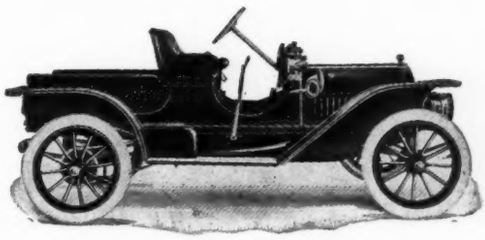
Dining Room and Cafe First Class. European Plan.

ABSOLUTELY FIREPROOF

Stone floors; nothing wood but the doors.
Equipped with its own Sanitary Vacuum Cleaning Plant.

Strictly a Temperance Hotel ***Send for Booklet***

STORER F. CRAFTS, General Manager



Every Telephone Company has need for a Schacht

Both time and money could be saved by having a Schacht convenient for chasing trouble, delivering directories, hauling poles, making collections, etc. Ready in a moment's notice. Not a combination trunk and touring car that could be adopted to telephone work but a car built particularly for it.

When in the market consult us and get the best there is for your particular needs.

Price $850. Special discount to telephone men if ordered now.

SCHACHT MOTOR CAR CO.

2734 Spring Grove Avenue, - Cincinnati, Ohio

ties and requirements the firm is able to give a much more intelligent service.

"Quick Action on Long Distance Calls" is the title of the second article. It concerns the business of a large firm of grocery brokers. This house, when there is a market for any of the staples or other products which it handles, places as many as one hundred long-distance calls at a time. In order to obtain quicker service and economy in handling these calls the firm supplies the telephone company with a list of customers for each product, and these lists are kept on file in the operating room. From these records the telephone company makes up a special operating position and it keeps a card record of the designated customers. To the back of each set of cards are attached several sets of telephone toll tickets made out in accordance with instructions previously given.

In this way, when there is a market for a certain product, the firm puts its system into effect by simply giving the word. A representative calls the long-distance operator and orders service on "List 'F' complete" or "List 'F' except numbers 4, 9 and 12." The long-distance operator at once removes the toll tickets from her card index tray and proceeds to have the connection made.

A Nebraska Company in a New Home.

The Union Telephone, Wausa, Nebr., is one of the companies which has moved into new quarters this year. The illustration shows the company's new home which was occupied last month. The ground floor of the building is

A Small, Well-Built Modern Exchange.

leased to the United States government for the local postoffice for which purpose it was specially designed.

The upper floor is arranged for the telephone exchange and offices. The entrance to the exchange is through the door of the adjoining First National Bank building.

"Public Necessity and Convenience" in Michigan.

The Michigan Railroad Commission handed down on Thursday a decision denying permission to farmers near Vermontville, Mich., the right to organize a company to operate in competition with the Citizens Telephone Co. The commission held that public necessity and convenience do not require the formation of another company.

Hamilton Home Complaint Formally Dismissed.

As forecast in TELEPHONY, the Public Service Commission, of Ohio, has formally dismissed the application of the Hamilton Home Telephone Co., of Hamilton, Ohio, for connection with Cincinnati via the lines of the Cincinnati & Suburban Bell Telephone Co. The decision was thus rendered to accord with the opinion of the attorney general of the state, who held that the wording of the law did not permit the issuance of the desired order by the commission.

Three separate cases were involved; that of the Hamilton Home vs. the Cincinnati Bell; the Hamilton Home vs. the Cincinnati Bell and the American Telephone & Telegraph Co.; and Frank M. Hughes, et al, vs. the Hamilton Home, et al. All had the same end in view, the connection with Cincinnati.

The commission found that both the Cincinnati Bell and the Hamilton Home had lines in Butler county, in which the city of Hamilton is located, although the Home company reached more subscribers and operated more exchanges there than did the Bell; and that some parts of the county were reached exclusively by the one and some by the other company.

It also found that the Bell company had the only toll lines into Cincinnati and that it had a monopoly of the local business in that city. Further it found as follows:

> The complainant company's lines and defendant company's lines could be made by the construction and maintenance of suitable connections, or the joint use of equipment, or the transfer of messages at said city of Hamilton, to form a continuous line of communication between any and all of the complainant's subscribers and patrons in said city of Hamilton and Butler county and any and all of defendant's subscribers and patrons in said city of Cincinnati and suburbs.
>
> And the commission finds that because said defendant, the Cincinnati & Suburban Bell Telephone Co., connects its system of telephone service in the city of Cincinnati and suburbs with its system of telephone service in the city of Hamilton and Butler county, and for no other reason, it is without jurisdiction, and it therefore declines to issue the order or grant any of the relief prayed for in complainant's petition. It is, therefore,
>
> ORDERED, That for want of jurisdiction and power to make any order in the premises, the petition of the complainant be and the same is hereby dismissed, and that the costs of these proceedings be taxed against the complainant.

The Hamilton Home, by this ruling, has lost none of its rights in court and may now proceed to appeal from the decision of the commission should it so desire.

Cincinnati Women Praise Telephone.

It was only a few years ago when not very many of those who were recognized as the somebodies of the community enjoyed what was then accepted as the luxury of telephone service, says an item in the Cincinnati Engineer. How manifestly different today!

There are very few people who figure that they are able to afford not to have a telephone.

"Just imagine what our modern life would be like if we had to endure without telephone service," said a matron, who confessed: "For a time I did not feel as if I wanted a telephone, but one of the very first advantages I enjoyed made me an enthusiastic advocate. An unexpected invitation came to me one night. Over the telephone I heard this message. 'Want to go to hear Paderewski this evening?' And I certainly said 'Yes.' If I hadn't had a telephone I'd have missed that treat. Ever since the incident I've been a firm believer in the value of telephone service."

"The time I save every day by attending to the little household odds and ends of buying my groceries by telephone is worth more to me than the cost of a telephone," was the declaration of another member of the party.

"My husband didn't want a telephone at home," said a third. "I did. The time came when I had a prospective birthday, and he hinted around to see what I'd like for a gift, and I said: 'All I want is a telephone.' Well, I got it, and that husband of mine, who didn't like the idea—well, I believe he'd ask the mayor to send out a squad of police to stop anybody who would attempt to take that telephone away."

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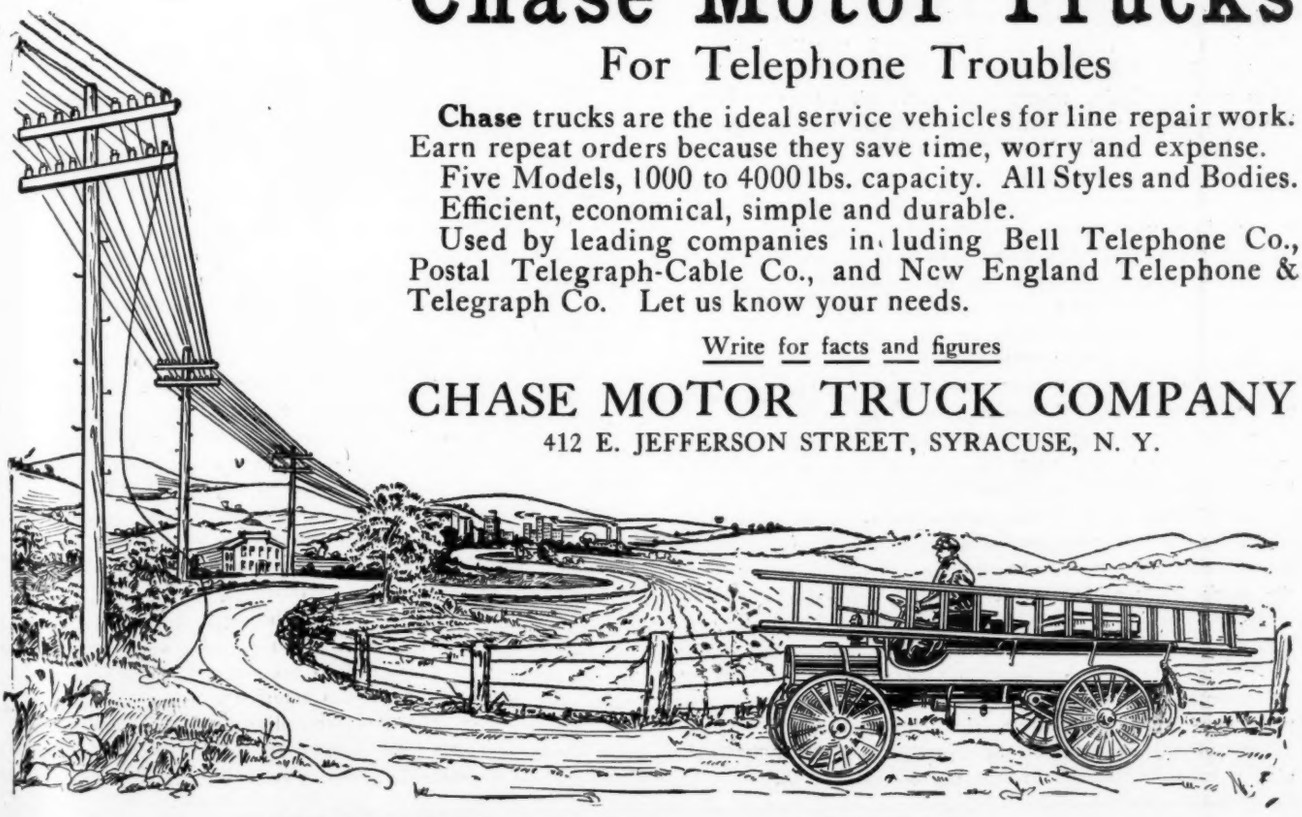

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The Importance of Systematizing the Clerical Work

Systematization for Accuracy of Primary Importance, That for Speed of Secondary—Value of Preventing Mistakes by Various Checks—Things Should be Done at the Psychic Moment—Consideration for Others Helps the Work of the Organization

By Hugh Taylor

Superficially viewed, bookkeeping and clerical work is of the same general nature, that is, the keeping of records. It has become customary to recognize the difference between bookkeeping and clerical work as between work that is planned with a comprehensive view and definite aim, and work that has as its aim only the accomplishment of the immediate task before it.

In the complex mechanism of modern telephone corporations, the bookkeeping records are almost entirely built upon clerical records. It is therefore essential for the clerical records to be absolutely accurate. Systematization for the attainment of *accuracy* is of the first importance. Systematization for the attainment of *speed* is of secondary importance.

A trained bookkeeper, as his experience advances, uses more methods of checking his work, instead of less. He realizes how much time he loses by *not preventing* mistakes, and he does his level best to make mistakes impossible, because he knows his records have to balance. A clerk has not the same club hanging over his head, and without being actually careless, is too prone to forget that even the most accurate workers sometimes make mistakes. To do good clerical work it is incumbent on the individual to devise and use systematic methods of checking his own work—such methods can be found in abundance. There is hardly any task performed that cannot be done in two different ways and the results compared. Often, by putting on one's thinking cap, one will find that work is actually done in two ways, the check is already prepared and only waiting to be used.

Systematization for Attaining Speed Does not Mean Hurry.

There is a certain time when it is easier to do a given thing than it is at any other time. This time is usually designated the "Psychic Moment." If a man has the ability to decide when that particular moment has arrived, he goes through life with much more comfort to himself and others than one who has not developed this instinct. Work goes with a certain swing which is lacking at other times. This is because not only the man doing the work but everybody else who is in any way related to the task, is interested at the same moment and lends a moral support and an actual help, lacking other times, because interest is diverted to some other task whose particular psychic moment has arrived.

It pays to work overtime, to do things which are only a little behind in order to catch up and be free to perform each task when its particular time arrives. Every one of experience knows that the same amount of work has to be done, whether on time, or later, and how much harder it is to do work that is past due, than it is to do it on time; but few take the pains to plan ahead so as to be ready and able to do the work at the proper time. It is not always necessary or advisable to do work ahead of time, but on time is the happy medium. It helps the man who is doing the work and makes it easier for him. A man who is always on time is quickly recognized and appreciated by those around him, and it is a course of great satisfaction to the man himself to feel that he is up to date with his work.

In considering the importance of systematizing clerical work, the result to the whole organization (of which the clerk is one of the cogs in a wheel) cannot be overlooked. To give a concrete example, suppose the treasurer of an organization wishes to settle a certain bill for which he has received a request from a creditor, who also happens to be a subscriber. He asks for the bill from the general office bookkeeper who reports he has not received it. The bookkeeper asks the purchasing department which says it has received the bill but is unable to pass it because no receiving record has come.

The purchasing agent accordingly asks the manager if the goods have been received. The manager in turn asks his bookkeeper and the bookkeeper asks the troubleman. The troubleman looks through his stockroom and finds the goods have arrived, makes out his receiving record, gives it to the bookkeeper, who mails it to the purchasing department.. The purchasing department O. K.'s the bill, sends it to the operating department for approval, and that department sends it to the bookkeeping department; the bookkeeping department places it on the books and reports to the treasurer that the bill has been properly O. K.'d.

Now suppose that each party in the chain holds up his particular duty, which should only take a minute or two, for half a day, allowing the request to lay on his desk with numerous other papers before asking the next man. The time consumed in going from the treasurer, through the various links of the chain, to the troubleman and back to the treasurer, would be eight days. By this time, the treasurer has probably used the available money for other bills. Consequently there is an importuning creditor and a dissatisfied subscriber, and the manager through whom the request for payment has come, gets ———, whatever or wherever that is.

The manager blames the head office, the treasurer and the whole company. If everybody in the chain had been working up to the psychic moment, first of all the treasurer would not have had to go elsewhere than to the bookkeeper for the bill, because the receiving record would have been in and all the rest of the duties would have been performed. By having to send the request all the way down the line and back three times, more work has to be performed than would have been the case if the receiving record had come through immediately the goods had arrived. In the second place, if the goods had only just arrived when the purchasing agent's inquiry came, if everybody had moved promptly, the receiving record would have been back to the central office by the very next day, instead of taking eight days.

The bane of the telephone business is the large number of detail duties which cannot be foreseen. This is inherent in the very nature of the business, but it also helps to relieve monotony and make it interesting. Now a great temptation arises to interrupt each other many times during the day on these detail matters as they present themselves. This feature can be eliminated very largely by writing pencil memoranda to the other party, rather than by periodical visits or by telephoning. Also in such matters as are better discussed personally, by keeping them until several have accumulated, or better still, by arranging a set time each day or each half day, at which hour the two individuals meet for clearing up the matters.

Another thing which will help oil the wheels of the organization is that of thinking of others. A little clue dropped here and there, as the work is being done, would help a brother wanderer through the apparent intricate maze of de-

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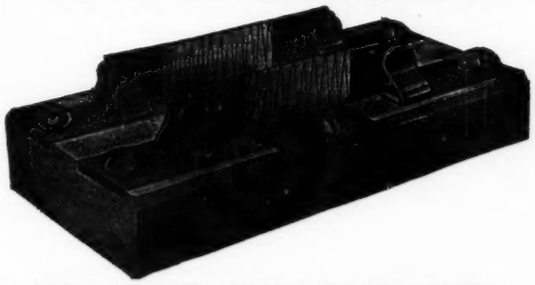

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tails which confront him, onto the right track, and help him to realize that every line of rails leads to some depot—that when once tracks are laid, they do not run into each other in a confused and irregular fashion. You may selfishly save yourself a half minute at your own task, but you rob the organization for which you are working, of possibly ten minutes or half an hour of some other employe's time, by neglecting to take advantage of the opportunity.

A thorough organization which goes down to the roots of things, deals also with personal conduct towards one's fellow employes. If you treat your associates with proper consideration, they go about their work with serenity unruffled and use their thinking capacity to the best advantage. If you treat them rudely and ungraciously, they waste part of their energy in thinking resentment, even if they do not express it openly, and you are robbing the organization again of part of its employe's time. Furthermore, you handicap your own efforts, as you will soon find that those around you do not give the little helps which go so far towards making your work run smoothly, being repelled by your disposition.

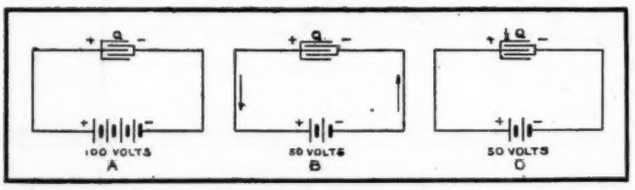
To sum up systematization for speed in a practical way: make a pencil memorandum of the duties you perform during the entire day, noting time of commencing and finishing each duty, to the second. Then take a quiet half hour and study your own work—rearrange it; ask yourself, "Could I have done this in a better way—at a better time—or could some of my helpers have done it to better advantage?" The result will surprise you. After you think you have perfected your plans, show them to a trained systematizer. The result will still further surprise you.

Queries on Theory and Practice

The Charge of a Condenser.

It may seem like a foolish question, but I would like to know what becomes of the charge of a condenser if it is charged from a 100-volt battery and then quickly attached to a 50-volt battery. Can the condenser hold the higher charge?

When the condenser is attached to the 100-volt battery, it becomes charged to a certain degree, diagram *A*. When



Condenser Action When Switched From High to Low Voltage.

you switch it over to the 50-volt battery, half of the electricity will be discharged through the battery, as arrowed in diagram *B*, coming to rest in the condition shown in diagram *C*. Notice that the discharge from the condenser is in such a direction as to charge the battery, though not to any measurable degree.

Trouble on a Toll Line.

Here is a case of trouble which we have on one of our toll lines. Sometimes we can hear and talk finely over it and at other times we cannot hear a thing. It is a metallic line, thirty-five miles long and has only two stations on it. We have had this trouble for over six months. Have gone all over it, but cannot find anything wrong.

In absence of any results of tests which you have made or should have made, we can only outline the possibilities and suggest methods of attack. It may be that the line is periodically short-circuited by some person, etiher intentionally, or by doing something which he supposes is harmless. It brings to mind the old lady at a way-station, who laid her glasses, gold rimmed, across the main switch which cut the line straight through. This accidental short-circuiting of the line may occur either at a station or out on the line. It will require some detective work on your part to discover it, especially if it is malicious.

You may have a swinging "open" or "short." These are often hard to find, but by keeping your eyes open and your brain busy while inspecting every span and pole, you can get it.

There may be trouble in the terminal apparatus. To test for it, wait until the trouble comes on the next time. Then cut off the switchboard and all accessory apparatus and test the line alone. Test it for short circuits and breaks, using any one of the standard methods. If the line tests clear, both for the tests and for talking, you will know that the trouble is in the switchboard. If the line is in trouble, it will surely show up by this kind of test.

Cross Talk on Parallel Grounded Lines.

We have a line No. 1 running parallel with line No. 2, a distance of two miles, when line No. 2 ends. Line No. 1 continues for one mile farther. Line No. 2 is a grounded bridging line, having three 1,600-ohm stations on it. Line No. 1 is a private grounded line with a 1,600-ohm bridging instrument at the terminal. We cross talk plainly on these lines, and when we ring parties on line No. 2, it cross rings No. 1 party in on the line, though the lines are well insulated. The cross ring does not throw our drops at central, although it is strong enough to ring the party in on Line No. 1. With a view of not installing a metallic circuit for the No. 2 line, I am in quest for some sort of device to overcome it. Can you advise me how I may install repeating coils, and if that will overcome the trouble?

You have no need for installing metallic circuits or putting in repeating coils to cure the cross ringing which you describe. If you have two ground return telephone lines which parallel each other for not over two miles, there is no reason under the sun why they should cross ring. There is either leakage or high capacity between the two lines to cause this trouble. No matter if you think that you know that the lines are perfectly insulated, make another test. Cut the No. 1 line off at the switchboard between the line drop and jack, and the ground, leaving the drop and jack attached to the line. Cut it also at the two-mile point where the lines part company. Then take a good strong series telephone, wire one line terminal to ground and the other to the line No. 1 and ring strongly.

If the line is properly insulated you should get no ring of the bell on this series telephone. Look well to your

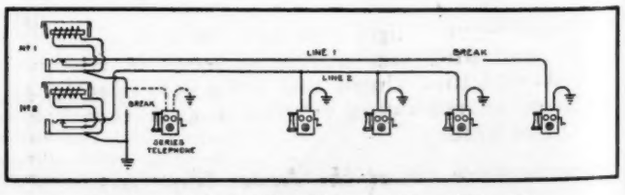
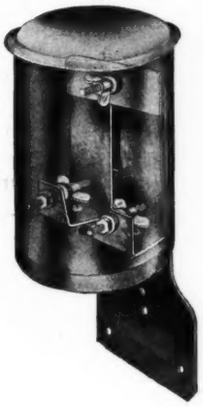


Diagram of Insulation Test for Two-Mile Line.

cable, if the lines go out of the office through cable. Test the line, section by section, and leave no part in doubt. Rest assured that there is no cause for making the lines metallic or of buying repeating coils to kill cross ringing if they are parallel not over the two miles.



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Because it is killing that expense of making long drives over party lines looking for a partially grounded carbon, the trouble that is so often difficult and expensive to locate. This accounts for this arrester finding its way into almost every rebuilding order. The day of lightning trouble is passing. Write for particulars and prices.

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In the Rural Line Districts

The Pleasant Prairie & Jo Daviess telephone line have been putting in new cedar posts, and now have one of the best lines in southern Minnesota.—Blue Earth (Minn.) Post.

The telephone manager visited the telephones along this line last Monday and made a great improvement.—Spring Creek Item, Overton (Neb.) Herald.

The J. A. Stransky telephone line will soon be built into Bijou Hills, the poles being already on the ground. This will be a great convenience to the people of Bijou Hills and they should do their best to make this end of the Stransky line a paying investment.—Bijou Hills Item, Chamberlain (S. Dak.) Democrat.

The Bell Telephone Company has a force of men rebuilding its line from where it branches, five miles south of Olathe, to Pleasanton. B. H. Saunders has furnished the team and wagon to carry the men back and forth. Gale Cave is the driver. The team will be gone about four months.—Olathe (Kan.) Mirror.

Bedminster Telephone Company, which constructed a line to Kellers Church, has staked off and proposes to get to Gulden's creamery and as far as W. A. Dietrick's place and will within a short time complete that line.—Doylestown (Pa.) Democrat.

The switchboard for the farmers' line arrived Saturday and experts are busy installing the new outfit, which looks as nice as a piano. Now Mrs. Ben Hickok and her capable daughters can connect up the patrons of the line in style. The improvement is a good one.—Bloomington Item, Fennimore (Wis.) Times.

The new telephone line is to extend to our road.—Sheboyan Falls News, Plymouth (Wis.) Reporter.

The telephone system has been completely overhauled. New wires, poles and switchboard have been installed. The equipment is capable of handling the business in excellent style.—Bishop Hill Item, Galva (Ill.) News.

The Aniwa Telephone Company have their wires strung around town and out in the country as far as J. A. Manser's.—Aniwa Correspondence, Birnamwood (Wis.) News.

Friday Hawthorne was in Galva yesterday afternoon, where the last car of telephone poles were unloaded. The line is being built from Little River to Hillsboro and will require 1,200 new poles and over a hundred miles of copper wire.—McPherson (Kan.) Republican.

The Darien Telephone Company have greatly improved their line to Fairfield and have added new wires and have two new subscribers on the line.—Darien Item, Delavan (Wis.) Republican.

The telephone company was out Friday and built a new line from the corner on Broadway up to Tom Peterson's.—Waukokee Item, Preston (Minn.) Times.

The telephone service from Lamar to Minden is about as good as a service can be. It is so much better than it has ever been that a patron can hardly believe he is talking to Minden. This is all due to the fact that the line from Liberal is in a great deal better condition than in other days.—Lamar (Mo.) Sentinel.

In assuming the management of the local telephone exchange I ask for the co-operation of all the patrons. It is to be my aim to give you as near perfect service as is possible. I frankly admit that I am not at present acquainted with any defects in the system, if there be any, but I can assure you that as soon as I find "loose wires" they shall be tightened for the betterment of all concerned.

I will appreciate it very much if you will phone all trouble direct to Mr. Roy Bain, who will continue in the service of the company as Superintendent. In case you are unable to get Roy, leave word with central. Beginning with the first of August the central girls are instructed to make no telephone connections unless the number is given. New directories were recently issued, and if you have not received one let us know and we will be glad to mail one to you. This idea of stepping to the phone and giving central the name of the party you want and expect her to find the number is all a habit, and you can't expect service with such things existing. In every way possible you do your part and in turn we will give you the best service possible. O. H. Barnes.—Table Rock (Neb.) Argus.

The Virden Telephone Co. expects to get their central moved to the Allen building by this evening.—Virden (Ill.) Record.

Three telephone linemen are at work giving the telephone system in town a much needed toning up.—Stanton (Iowa) Call.

Miss Maggie Gibson, who for the past seven years has been employed by the Independent Telephone Co., has resigned her position and will leave the office Saturday. Miss Gibson will go to Zurich, Kans., where she has a good position in the bank in which her brother is also employed. She will be greatly missed by her many friends, both in the lodge and club, and also by the telephone company. Her services have been greatly appreciated by the patrons of the company.—Mound City (Mo.) Jeffersonia.

The new switchboard for the Independent Telephone Co.'s exchange at Mt. Carroll has arrived and Frank Zinnell went there this morning to get the men started to work on it.—Savanna (Ill.) Times.

Jay Uriel spent a busy day Saturday fixing the telephone line, which has been out of order for several days. He found several weak places on the line.—Burnham Item in Stockton (Cal.) Record.

The Morenci Telephone Co. finished the work of painting its poles in the city Monday. The color used was green, the same as the electric light poles. Both companies are to be commended for their good work, as the improvement adds very much to the neat appearance of the town. There is also a lot of the residences of the city being painted anew, and by the time Home Comers' day rolls around, the town will be spick and span and a most inviting place for our visitors.—Morenci (Mich.) Observer.

Electricians have been busy for the past several weeks in installing a new switchboard in the offices of the Hoopeston Telephone Co. and the work will be completed by tomorrow morning. The Hoopestonite will never more need bother to ring central. All that will be necessary to call central will be to take down the receiver and the telephone user will be immediately connected with central. This is one of the latest innovations and is a step forward for Hoopeston. In addition to this, Manager Boorde will remove all the old telephones and substitute new ones. The expense in making the charge is great and the management is to be congratulated on their progressiveness.—Danville (Ill.) Democrat.

There arrived at the local telephone office this morning a new switchboard with 150 drops which added to the present boards will be a great help, and judging from past records, will be filled up in a short time. With an accommodating force like the local one, any telephone system would increase the business for their company.—Kaufman Item in Terrill (Tex.) Star.

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of the manufacture of **Roebling Double Galvanized Telephone Wire** is conducted with one end in view —to produce durable, uniform wire of high conductivity.

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Sparks from the Troubleman's Department

Over the Telephone.

By Rene Maizeroy.

James Rupert Leighton yawned and lit a cigarette, only to throw it away after the third whiff. He had just had his morning bath. He felt strong and refreshed and the reflex in the mirror showed him an unusually handsome young man, with dark curly hair, blue eyes and clean cut features. The thin white silk pajamas could not conceal his athletic figure.

A waiter appeared, placed a breakfast tray on the table and retired in silence.

The young millionaire threw himself into a big, comfortable chair, rested his elbows on his knees, his chin on his hands, and began to think of the violent scene he had had with his wife the night before.

Had he gone too far? He did not think so, although he knew he had been drinking. Surely her behavior had been beyond endurance. He was no model husband; he knew he had been flirting with many women in society or outside, but this was no reason why he should permit her to make him appear ridiculous by her sudden whims, her eccentricities and her too open flirtations, with men like handsome Billy Rutherford or a professional lover like Cecil Harvey.

Of course, he knew that he had neglected her, that he had placed temptation in her way more than once, just because he knew that Ellen could be trusted in everything. Even now something told him that it was more than likely that her flirtations were nothing but an attempt to arouse his jealousy, a ruse to win him back.

He could still see her pale, unhappy little face as she was kneeling before him the night before, sobbing: "Oh, you know very well, James, that I love only you and never will love anybody else; that you are my happiness, my life; that I despise those men who think themselves irresistible charmers of women; that I want nothing better than always to be your own little girl, your wife. If you will only stop driving me mad, leaving me alone or taking me into the mad whirl of society, which I loathe."

But he refused to listen; he had called her hard names, and he had said that he was determined to get a divorce, leaving her sobbing her heart out, and he went to spend the night at a hotel.

Suddenly the telephone bell rang.

With smiling lips, James unhooked the receiver. He knew there was only one person who knew his present whereabouts.

"Hello, is it you?" whispered Ellen's voice so faintly that he could barely hear it.

"With whom have I the pleasure to talk?" he asked, coldly.

"Oh, James, you don't mean to say that you don't know my voice!"

"I beg your pardon, the instrument is not very good."

"Did you sleep well?"

"Yes, thank you."

"It is more than I can say. I have not been in bed at all."

"You have not?"

He tried to make his voice indifferent, to treat her like a stranger who bored him. He could see before him her pale, little face and the big brown eyes all red with crying, her hair still dressed for the night and her lace-ruffled dressing gown. She was having her punishment now, and he enjoyed the thought of it, picturing to himself the sweetness of their reconciliation.

"And you are not ashamed of yourself, you big man, to have made me suffer so cruelly?"

"Whose is the fault?"

"I have done nothing bad enough to make you leave the house."

"Oh, you will find plenty of friends who will cheer you up."

"James, I forbid you to talk like that."

"You have only to choose between Harvey and Rutherford."

"You will be sorry, James, for treating me the way you do."

"Do you think so?"

"James, I can't bear this any longer. My head is splitting and my heart feels like breaking. You must not treat me like this when you know I have done nothing. You drive me mad. I will do anything you ask, James. Let us leave New York together and go far away by ourselves. I love you so much, James, dear; do tell me this is nothing but a horrible dream and that you are coming back to me."

There was a moment's silence and he could hear her sobbing.

"James," she began again. "I am going mad. Why don't you answer?"

He smiled and said sternly:

"It will be as I told you last night. Nothing can make me change my mind. It is my last word, Ellen."

He hung up the receiver and began to dress. The telephone rang again. "Hello! hello! Please stay at the telephone! Listen—perhaps this will make you come home."

There was a loud report, then her voice came faintly:

"I am dying James! Won't you come home and close my eyes?"

The Telephone.

Heir of the centuries am I,
  But newly come to serve mankind and you;
Messenger of the lame, or for the spry,
  Alike I serve where'er my helpfulness is due.
I ease the toil of every race of men;
  I warnings give of fire, of blood, of death;
Swiftly, silently I summon succor when
  All else were vain and wastefulness of breath.

For nineteen fateful centuries, about,
  Had time toiled on, now slow, anon with speed,
Before the world and you had found me out,
  And set me at the work in which I lead.
But now, your faithful servant, here am I—
  Quick as light, my movements never cease.
I flash the news that stifles many a sigh
  And lend my potent strength to world-wide peace.

—S. W. Telephone News.

Dan Craft Helps Out.

"Dan Craft," whose address, if it accompanied the following, has unfortunately been mislaid, sends this verse, in Walt Mason style, for the "Sparks" page. He says it was "handed" to him, so he passes it along:

Some Bug Hunters' Troubles.

The troubleman woke from his sweet repose, scrambled out of bed and shivered into his clothes. The mercury stood at 30 below, and the blamed earth was pale by the presence of snow. "Oh, well," said he, "it's not as bad as some of the weather we might have had. But I'm glad, last summer I worked late many times, setting poles and pulling slack on all the farm lines. So when old Winter brings his blizzards and

¾ Mile of Cable Saved from Ruin

One of the leading Indiana telephone companies built an expensive cable line

Almost a mile of it was continually giving trouble on account of crystallization caused by tapping of the branches of trees through which the line ran. The cost of constant repairing was so large and the service so poor that it was thought necessary to abandon this line and rebuild along another route.

Instead—they saved their line by installing Aerial Conduit. It is the one sure, inexpensive and thoroughly satisfactory way to protect cable where it runs through trees.

Learn about Aerial Conduit—perhaps it will save for you.

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Write for FREE SAMPLE Make Test and Comparison

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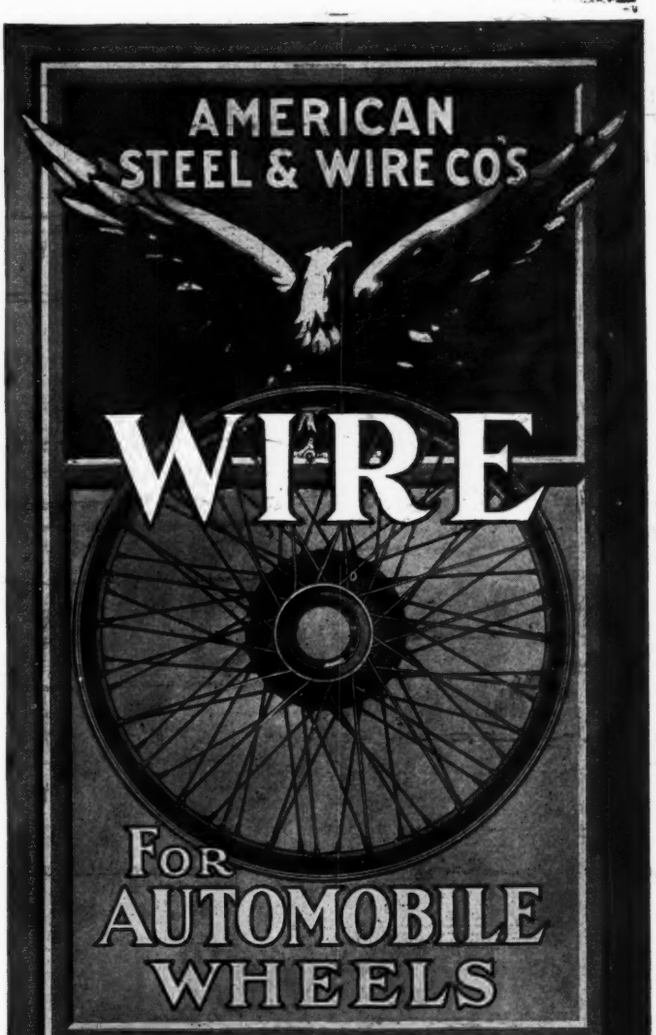

WIRE WHEELS mean nearly 70% more tire mileage over wooden wheels because the bare rims and wire spokes radiate the heat; and further, they softly float over obstructions while wooden wheels rigidly bounce. Wire wheels are much stronger by actual test, and are also considerably lighter, especially at the rim and this materially economizes engine power. Eighty per cent of recent Grand Prix racing cars were equipped with wire wheels; and this is about the percentage of wire wheels used on all pleasure cars in Europe. They are destined to become universal as their beauty, economy and engineering advantages make them the only correct wheel for automobile use. You should insist upon having them on your car. Write for our *American Wire Wheel News*, fully describing all makes and methods of manufacture, and how you can adapt them to your car.

Frank Baackes, V. P. and G. S. A.
72 West Adams Street Chicago

such, I can stay in the office and not mind it much." He entered the office with spirits high, whistling parts of the old song, "Sweet Bye and Bye." The wire chief looked up, said, "Billy, old sport, we got a farm line that shows a dead short, and another one seems to be broken in two, and of course, my boy, it's all up to you. But cheer up," said he, "in Heaven divine there's no such a thing as a telephone line."

The "Busy" Signal.

Fellow on the telephone,
How he'll roast the line
When he hears the monotone
Of the "busy" sign;
He will swear outrageously,
Call the service bad—
But I really think that he
Should be mighty glad.

Now that "busy" signal thing
Is a pleasant sound,
Better than the ting-a-ling
When folks loaf around.
When I get that "busy" burr
I don't sigh or sob—
It's a signal to infer
Folks are on the job.

How I wish that ev'ry 'phone,
Either east or west,
People never left alone,
Never gave a rest.
Really nothing better, friend,
I could wish for you.
Than each day without an end
Yours was "busy" too.

—Douglas Malloch in the Telephone Monthly.

The Automatic Telephone.

Inhuman goblin-thing, man's last creation,
Voiceless, and passionless, I see in you
Grim portent of an age whose consummation
Shall leave us mortals little else to do
But run about with pockets full of pence
Seeking the slot to suit our special need,
When common men, bereft of common sense,
Shall simply turn a handle (a smooth and shiny handle!)
To ride, or smoke, or feed.

No more we'll watch the postman dodging smartly,
Laden with wondrous words, from door to door;
No more the maid matutinal will tartly
Exchange retorts with P. C. X. Y. 4;
By some uncanny, soulless, steel appliance
Our letters will be shot upon the shelf.
While as for girls with brooms, by help of science
We'll merely press a button (a nasty little button!)
And the room will sweep itself.

Our dinners will be served up by machinery;
'Twill rain on Monday only (by desire);
The principal ingredients of our scenery
Will be a mass of wheels and screws and wire.
But O! I trust, millennium mechanical,
When you impinge upon this lukewarm ball,
I shall not know existence thus tyrannical,
But be in a museum (labeled, in a museum!)
Unconscious of it all! —London World.

An Irishman, lately over, was working in the yards of a railroad. One day he happened to be in the yard office when the force was out. The telephone rang vigorously several times and he at last decided it ought to be answered. He walked over to the instrument, took down the receiver, and put his mouth to the transmitter, just as he had seen others do.

"Hillo!" he called.

"Hello!" answered the voice at the other end of the line. "Is this eight-six-one-five-nine?"

"Aw, g'wan! Phwat d'ye think Oi am? A box car?"

Caught with the Goods.

The man and his wife, or perhaps it might be more proper these days to say the lady and her husband, had been having one of those cute little breakfast table chats wherein husband and wife twit each other about their relatives and get very personal in their observations.

The argument had grown heated and had reached the point where the wife usually makes up her mind to go home to mother, when the telephone bell rang. The wife answered the telephone. A sweet voice asked:

"Are you having trouble?"

"Well, of all things!" snapped the wife in reply. "What if we are? It's none of your business."

"O, yes it is some of my business. Locating trouble is the only thing I do."

"Well, you've got a nerve," replied the wife. "The idea of butting into private affairs like that—"

"If you had reported your trouble to me, I would have it attended to. One of your neighbors reported it."

"One of the neighbors? Great Scott! Could the neighbors hear it?"

"Your neighbor reported it this morning."

"Well, I'd thank my neighbors to attend to their own affairs. Who are you, anyway?"

"I am calling you from the trouble department of the telephone company. The neighbor reported that there was something wrong with your telephone."

"For the love of Mike," shrieked the wife, as she dropped the telephone receiver and nearly fainted away. "Caught with the goods."—Halifax (N. S.) Monthly Bulletin.

An old farmer was skeptical as to whether people who were miles apart could really talk to each other over a telephone wire.

One day his wife went to make a visit to a distant friend who had a telephone in her house. During the afternoon the farmer visited a near neighbor who also boasted a house telephone and who persuaded the farmer to call up his wife as a little surprise.

Following instructions he put the receiver to his ear, and, after the usual preliminaries, he shouted: "Hello, Jane."

Just then a flash of lightning caused by the heat of the summer day struck the wire, and he fell sprawling to the floor. The neighbor was chagrined that the old man should meet with such an accident on his first trial of a telephone, and assured him that such a thing would not happen except in case of storms. But he would not try again. He rose to his feet, and shaking his head knowingly, said:

"It's wonderful, that was Jane, all right."—Southwestern Telephone News.

No Nursery is Complete Without One.

Putting babies to sleep by telephone is the latest innovation in society circles, in Steubenville, Ohio. This method of quieting fretting youngsters whose mothers leave them at home while they enjoy bridge was recently introduced there. The nurse telephoned a club member that her baby was crying. The member went to the telephone and began singing a soft lullaby into the transmitter. The baby had been placed in a basket on a stand near the instrument, the receiver to its ear, and is said to have been lulled into dreamland by the soothing tones of the mother's voice.

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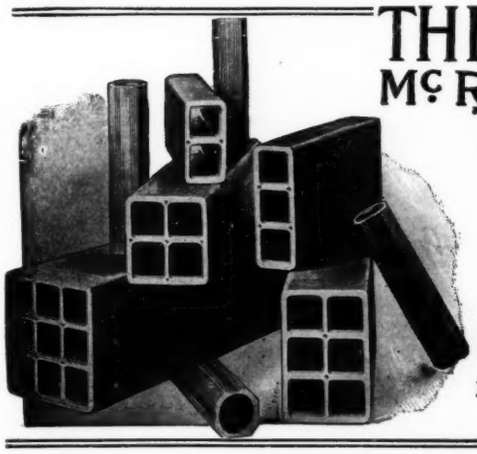

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Please tell the Advertiser you saw his Announcement in TELEPHONY.

From Factory and Salesroom

The Dart—A Motor Truck for Telephone Companies.

One of the recent entrants to the telephone field, of motor trucks, is the Dart, built by the Dart Manufacturing Co., of Waterloo, Iowa. We have been favored by them with the following interesting description of their car and its performances:

The Dart truck has a 20 horsepower motor, water-cooled, and lubricated by a special combination of the force-pump and splash systems. Dual ignition from a Remy magneto and dry cells is another feature found in but few other trucks of the same price.

The truck has a capacity of 1,500 pounds, and this in combination with its large loading space, 45 x 78 ins., makes it particularly well adapted to telephone construction and repair work. The speed is from 3 to 20 miles per hour, thus insuring speed, as well as promptness, in caring for distant repair calls.

Transmission is of the planetary type, multiple disc clutch. Chain drive is used throughout, this having been found most satisfactory from every standpoint.

Some remarkable records of economy in operation have been noted for this truck, one recently traveling 1,116

The Dart Motor Truck.

miles during a month with an average load of 1,400 pounds; the total expense for the period being $13.61. When it is understood, too, that this record was made in doing rural work mostly, its true significance can be appreciated.

Another one of the trucks averaging 40 miles per day over country roads entirely, consumed but about two gallons of gasoline, daily.

The manufacturers claim for their car that its simplicity, durability and economy in up-keep are its strongest features, yet the price is certainly reasonable and attractive to any one contemplating a purchase.

The Central Electric Company's New Catalog.

The Central Electric Co., of Chicago, is distributing a new general supply catalog, known as the 28th or Silver Anniversary edition. It is a large book of a distinctive and characteristic appearance, being of a royal blue color with white letters.

The arrangement of the contents is just as distinctive as the exterior and the entire book is complete, accurate and up-to-date. More than 1,100 pages are devoted to descriptions and data on new and standard supplies which will interest the entire trade using electricity in any form.

Sufficient space has been devoted to the description of complicated or unusual devices to give the prospective buyer enough information to select his material without writing for special bulletins.

Another time saving characteristic is the use of the standard manufacturers' list numbers in all possible cases. By so doing, the work of receiving clerks, store keepers, etc., is greatly simplified, as the manufacturers' numbers which are printed on the packages themselves, will correspond with the catalog and invoice numbers. The same economy of time is possible in large corporations where material on requisitions must be checked before securing quotations. Where these requisitions are specified from the standard list numbers, it is easier to secure quotations, and it also helps to avoid errors.

Further details regarding this unusually helpful and complete catalog may be obtained from the Central Electric Co.

The Vote-Berger Co.'s Big Anchor Order.

After exhaustive comparative tests, the Vote-Berger Co., of La Crosse, Wis., has received an order for 6,000 Drive and Twist anchors for Lansing, Mich. This is said to be by far the largest order ever placed by a single consumer, and demonstrates the growing popularity of the D. & T. anchor.

The tests which were required of the anchor covered holding power, creeping, adaptability and cost installed.

The required holding power was 5,000 pounds, and approximately double that was reached in the test. Perfect installation was made in sand, clay, and dry soil. The actual cost installed was said to be about one-half that of the nearest competitor.

Telephone Fire Insurance Exchange Pays a Good Dividend.

Jas. B. Hoge, manager of Telephone Fire Insurance Exchange, of Cleveland, Ohio, has, during the past few days, sent all its subscribers a substantial dividend on their underwriting.

The Telephone Fire Insurance Exchange has paid all its losses, set aside a proper re-insurance fund and declared a satisfactory dividend on all business transacted by it from the day it started business to January 1st of this year.

A Telephone Time Saver.

The London, England, papers have recently published descriptions of a device for the purpose of saving the time usually wasted in "holding the line" called a "Telephone Time Saver," which has been invented by H. Waymouth Prance, of London. It consists of a sound magnifying trumpet, of flattened form similar to certain types of motor horns, behind which is a platform adapted to support the telephone receiver. On receiving or making a call upon the telephone, and being asked to "hold the line a moment," the user, instead of "holding on" with the telephone receiver pressed to his ear, merely drops it upon the platform of the device, where it automatically slides into position with the earpiece against the small end of the spiral trumpet.

The user is then free to go on with his work until the voice from the trumpet shows him that the person at the other end of the line is speaking. Conversation can then either be carried on by means of the loud-speaking trumpet —thus leaving both hands of the user free for turning up references, taking down a message from dictation, etc., or the receiver may be lifted off the instrument and used in the ordinary way. It is said to be possible for the user to move some little distance from the telephone and yet hear when the person at the other end is speaking.

Kansas Company Installing an Underground Plant.

The Coffey County Telephone Co., of Waverly, Kans., has been granted permission to place its lines underground and the installation of an all-cable plant has been commenced.

J-M Fibre Conduit

"The Strongest Conduit Made"

For Underground Systems of Electrical Distribution

Railway Signal System Installation

Why continue extravagant use of pole lines with their contingent high cost of maintenance and depreciation?

J-M Fibre Conduit is a good investment and will last indefinitely, besides possessing many other advantages, viz.: **Light in weight, thus reducing cost of freight, handling, excavating and laying. Possesses absolutely smooth wall, thus eliminating abrasions of the cable sheath. Is tough and strong and not easily broken in shipment.**

Style "M" J-M Straight Drive Joint

Made in two inches to four inches inside diameter, fifty-four inch and sixty inch length of section.

Quick shipments.

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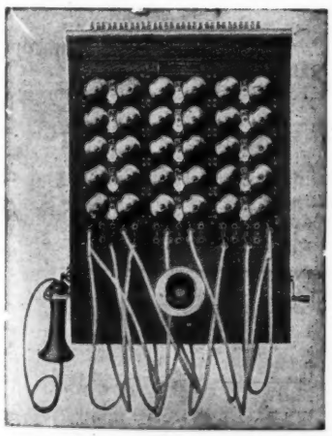

The Andrae Switchboard No. 110 is Troubleproof and Efficient

This is the perfect board for rural line use, It has all the superior features of our larger boards including a special heavy 5-bar switchboard generator, adjustable long distance transmitter, long distance receiver with operator's cord and plug, duplicate jacks with indicating bells. One extra pair of connecting cords and plugs furnished with each five bells. This is a very convenient and popular little board and is highly indorsed by managers of rural lines throughout the United States. It is first class in every respect and guaranteed electrically and mechanically perfect.

It is made to stand much hard use and to give economical and satisfactory service without any trouble. Write today for full particulars of the Andrae Switchboard No. 110.

JULIUS ANDRAE & SONS CO., 358 Broadway, Milwaukee, Wis.

Door Open

The "French" Folding Door Telephone Booth

(Patent Pending)

Has been evolved after years of study and experimenting and is now offered as the "last word" in telephone booth construction. It embodies all the good points of the ordinary swing door and the more modern receding door booths, and eliminates the troublesome features of both types.

Write for booklet describing the advantages of the "Folding Door" Booth.

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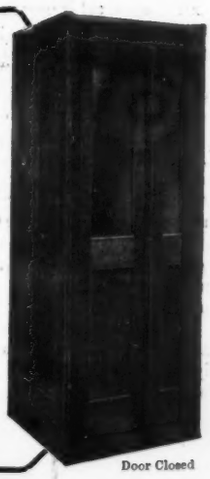


Door Closed

Please tell the Advertiser you saw his Announcement in TELEPHONY.

Record of Telephone Patents Recently Issued

1,032,529, July 16, 1912. BATTERY; C. F. Burgess and C. Hambuechen, Madison, Wis. A dry cell having soldered seams in the side and around the bottom of the zinc casing. The seams being protected by tarred paper. A terminal is soldered in the seam.

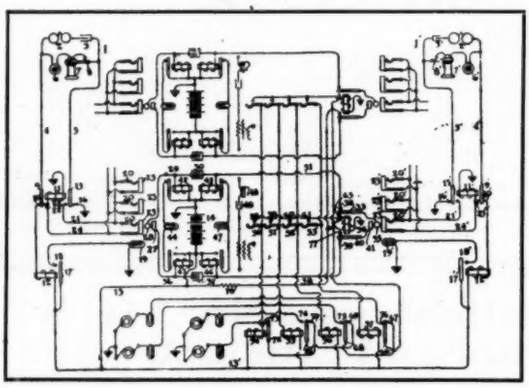
1,032,658, July 16, 1912. METHOD OF AND APPARATUS FOR ELECTRICAL WAVE TRANSMISSION; E. E. Clement, Washington, D. C. Consists of a telephone cable whose twisted pairs are composed of an iron and a copper wire, this it is claimed producing uniformly distributed inductance.

1,032,878, July 16, 1912. INSULATING BUSHING; J. E. Camatte, Laurel, Miss.; assigned to American Telephone & Telegraph Co. A bushing shaped to fit around the bared end of the conductor, forming a seat for the insulated part. Is used for meter connections.

1,033,085, 1,033,086 and 1,033,087, July 23, 1912. DIFFERENTIAL MICROPHONE TRANSMITTER; J. J. Comer, Chicago; assigned to Automatic Enunciator Co., Chicago. The first is of the carbon type particularly designed for musical transmission. The second transmitter has a stationary intermediate electrode. In the third patent a plurality of sets of interposed electrodes comprise the transmitter features.

1,033,098, July 23, 1912. RECEIVER; J. Halldow, Elyria, Ohio; assigned to Dean Electric Co. This receiver has a thin metallic body shell with the cap attached by means of threaded rings.

1,033,114, July 23, 1912. RELAY OR REPEATER; C. D. Morris, Washington, D. C.; assigned three-fifths to W. D. Junkin,



1,033,135.

Spokane, Wash., and one-fifth to J. B. Swinburne, Washington, D. C. A diaphragm beneath which are the receiving magnets and above which is the transmitter mechanism is enclosed in the middle of a casing with a lining for magnetic protection.

1,033,135, July 23, 1912. TELEPHONE SYSTEM; A. H. Weiss, Chicago; assigned to Kellogg Switchboard & Supply Co. Shows simplified switchboard wiring relating to the connection of different relays to the cord circuits for providing selective harmonic ringing.

1,033,228, July 23, 1912. DRY BATTERY CELL; J. W. Brown, Cleveland, Ohio; assigned to National Carbon Co. Comprises a zinc cup and carbon rod having a metallic core to which the binding post is attached. The core is said to have a higher conductivity than the outer part of the electrode.

1,033,619, July 23, 1912. TELEPHONE ATTACHMENT; E. Ross, Springfield, Mo. Consists of an ear tube arranged for attaching to the receiver.

1,033,725, July 23, 1912. AUTOMATIC TELEPHONE EXCHANGE; E. Newhold, Friedeman, Berlin, Germany; assigned to Deutsche Telephonwerke, G. M. B. H., Berlin, Germany. Describes particularly test and disconnecting arrangements for the selector switches.

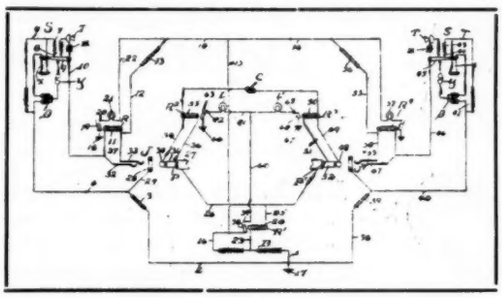
1,033,817, July 30, 1912. WALL TELEPHONE SET; R. H. Manson, Elyria, Ohio; assigned to Dean Electric Co. Wall board and box construction details are described. They provide for an interchangeable case for a wall set, hotel set or desk set.

1,033,859, July 30, 1912. BANK OF KEYS; C. A. Bals, Chicago; assigned to Corwin Telephone Mfg. Co. A set of reciprocating plunger keys for selective ringing on an intercommunicating system.

1,033,877, July 30, 1912. EXCHANGE SYSTEM; E. R. Corwin, Chicago; assigned to Corwin Telephone Mfg. Co. The chief feature is a special arrangement of the cut-off relays in connection with a resistance connected in one side of the line.

1,033,938, July 30, 1912. RECEIVER SHELL; F. O. Richey, Elyria, Ohio; assigned to Dean Electric Co. Consists of a metal shell with a special threaded joint for the ear cap.

1,033,963, July 30, 1912. BOOTH VENTILATING SYSTEM; E. M.



1,034,875.

Surprise, Boston; assigned to American Telephone & Telegraph Co. Comprises an electric fan connected with the booth by a tube at the top of the booth. The tube contains baffle plates having flaccid edges over which the air passes.

1,034,148, July 30, 1912. TELEPHONE ATTACHMENT; W. A. Schmelz, Pittsburgh. A device of the flexible tube and earpiece variety.

1,034,200, July 30, 1912. RECEIVER; L. W. Carroll, Riverside, Ill. On each side of the diaphragm is placed an actuating magnet.

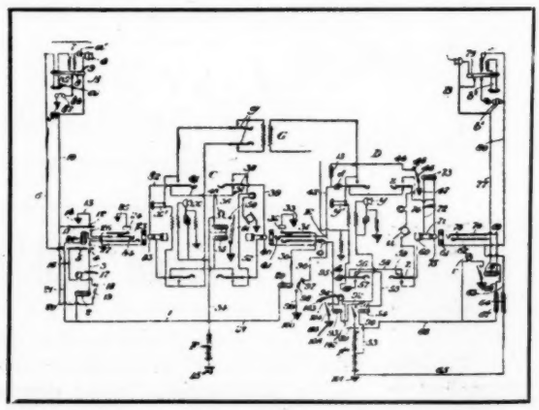
1,034,584, August 6, 1912. LIGHTNING ARRESTER; F. S. Chapman, Kenton, Ohio; assigned to National Electric Specialty Co., Toledo, Ohio. A silent discharge vacuum type arrester is described.

1,034,609, August 6, 1912. METHOD OF FAULT LOCATION; H. M. Friendly, Portland, Ore. Comprises an instrument by means of which measurements are taken and the trouble located by physical means without extended calculations.

1,034,807, August 6, 1912. CALL RECORDER; F. A. Lathrop, Portland, Ore. Comprises a rotating segmental sending switch and a printing mechanism as a recorder, electrically connected with each other.

1,034,875, August 6, 1912. TELEPHONE SYSTEM; H. P. Clausen, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co. Describes a local battery substation and a central energy exchange circuit.

1,034,964, August 6, 1912. MAGNETO BELL RINGER; E. Bowman, Elmwood, Ontario, Can.; assigned to C. R. Miller, Ber-



1,035,172.

lin, Can. The special feature is a spring supported armature attached to the magnet cores.

1,035,020, August 6, 1912. GROUND ROD; C. Lanz, Pittsburgh, Pa. The ground connection is made by means of a collar integral with the rod. The wire is coiled about rod and slipped into cup of collar and cup then filled with solder.

1,035,157, August 13, 1912. TELEPHONE SYSTEM; H. P. Clau-

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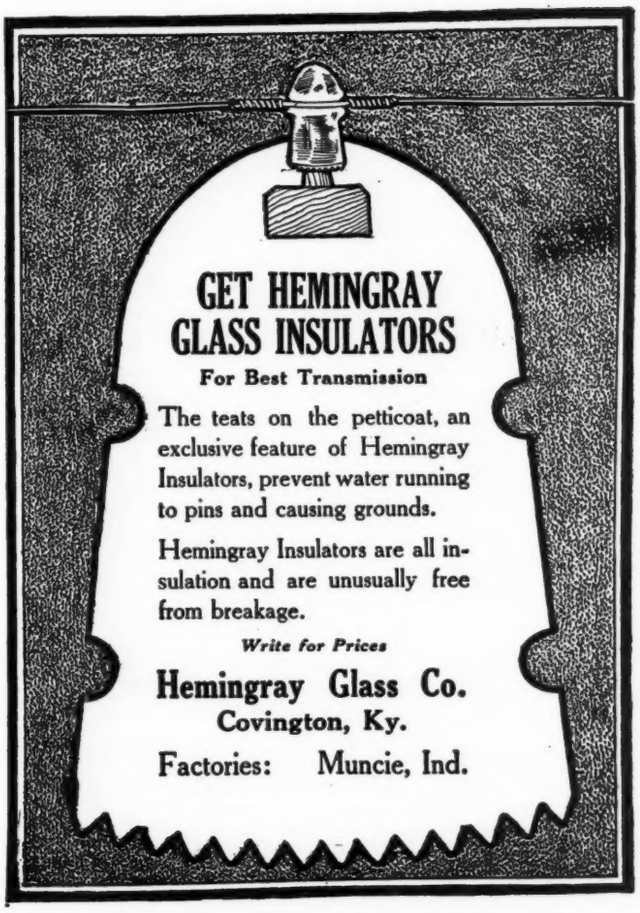

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T-6

sen, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co. A common battery telephone system with a two-wire cord circuit having repeating coils and condensers associated with it. Retardation coils are used as relays.

1,035,158, August 13, 1912. TELEPHONE APPARATUS; H. P. Clausen, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co. A common battery substation circuit with the transmitter serially included in the main line circuit.

1,035,159, August 13, 1912. TELEPHONE SYSTEM; H. P. Clausen, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co. The features are manner in which the line and cut-off relays are connected.

1,035,172, August 13, 1912. TELEPHONE SYSTEM; A. H. Dyson, Chicago; assigned to Stromberg-Carlson Telephone Mfg. Co. A trunking system between a centralized call exchange with local battery subscribers and a common battery exchange.

1,035,172, August 13, 1912. TELEPHONE APPARATUS; A. H. Dyson, Chicago; assigned to Stromberg-Carlson Telephone Mfg. Co. Supervisory lamp control relays for originating operator's cord circuit used in connection with trunking system of previous patent.

1,035,204, August 13, 1912. SYSTEM FOR MEASURING CAPACITY OF ELECTRICAL CONDUCTORS; O. M. Leich and C. M. Hague, Rochester, N. Y.; assigned to Stromberg-Carlson Telephone Mfg. Co. The features are a manually operated switch which connects cable to be measured to the charging circuit and a mechanism for interrupting this connection and connecting to the measuring instrument.

1,035,354, August 13, 1912. SIGNAL TRANSMITTER; Wm. Kaisling, Chicago; assigned to Kellogg Switchboard & Supply Co. A calling or signaling device having a movable member actuated by means of the fingers.

1,035,355, August 13, 1912. TELEPHONE SUPPORT; Wm. Kaisling, Chicago; assigned to Kellogg Switchboard & Supply Co. Comprises a desk set having the signal transmitter device mounted in the base.

1,035,415, August 13, 1912. INSULATOR; R. L. and G. Brown, Mayview Mo. A special design of pin insulator using springs to hold the wire in place instead of the wires.

1,035,493, August 13, 1912. TELEPHONE LINE SELECTIVE SWITCH; J. H. Swanson, Minneapolis, Minn.; assigned one-half to T. F. Robinson and one-half to Robinson Loomis Motor Truck Co. Minneapolis. A relay for connecting and disconnecting a central station telephone line with a line normally disconnected from the central exchange.

1,035,577, August 13, 1912. RECEIVER; S. P. Grace, Pittsburgh. The features are a motor driven disk which moves between the pole pieces of the electromagnet of the receiver. The design is for the purpose of magnifying sound.

1,035,893, August 20, 1912. GUY ANCHOR; F. B. Miller, Norwalk, Ohio. Consists of a pair of blades with outwardly curved extremities, pivoted together. Means are provided for expanding the blades so as to securely imbed them in the earth.

1,035,971, August 20, 1912. SELECTIVE SIGNALING APPARATUS; D. W. Kneisley, Dayton Ohio; assigned to Dayton Telephone Lockout Mfg. Co. Comprises circuit make and break mechanisms under control of the party line subscriber and means for rendering the subscriber's control ineffective.

Legal Cases and Decisions

By A. H. McMillan

Trimming Trees Where Reasonably Essential.

A telephone company, on compensation therefor, to an abutting owner, may, in building its line along a public highway, trim the branches of trees where reasonably essential to the proper operation of its line, without unnecessary interfering with, or destroying the trees. This is the law regarding tree trimming in New Jersey as laid down in the most recent case on the subject. The decision was made in a proceeding for condemnation to determine the amount to be paid a landowner for the right to place telephone poles in front of her property in a road and to trim trees as incidental to the proper operation of the telephone line.

Objection was made to the right of the telephone company to build the line, on the ground that it was not properly incorporated. The title to the act under which the company was incorporated related to telegraph companies alone, but a supplementary act included telephone companies as well. It was held that the company was properly incorporated and competent to build the line and bring the proceedings in question. Wray vs. Mott, 83 Atl. (N. J.) 866.

Injury by Trouble Wagon.

A Mrs. Becker owned horses and wagons which she let for hire. She had been in the habit of renting teams and drivers to the local telephone company at an agreed price per day, a bill for the services being sent at the end of each month. Having been notified that the company wanted a rig, she selected a horse, wagon and driver, who were sent to respond to the call and who performed such work as the telephone company's foreman desired. Mrs. Becker gave the driver no instructions, except to report to the telephone company. And she did not know at what work the team and driver were to be put. The driver was never put on the company's pay rolls as an employe.

The rider of a motorcycle, while riding on a city street, was injured by the alleged negligence of the driver, who was at the time hauling iron piping which extended beyond the end of the wagon. A sudden turning of the wagon caused the piping to strike the cyclist as he was about to pass. Suit for damages was brought against the telephone company, which alleged that the driver was not its servant and that consequently it was not liable. The Supreme Court of New York held the driver to be the servant of the company and thus affirmed a judgment against the company. Weber vs. Becker, 136 N. Y. S. 119.

Validity of Exclusive Contract Between Connecting Companies.

A contract between a local telephone company and one operating long distance lines, for an exclusive interchange of business, the local company agreeing that no other company should be permitted to make connection with its lines, and each binding itself to send messages only over the lines of the other to points on such lines, is not illegal as creating a monopoly, but is valid and enforceable. Such was a holding in a suit brought by one telephone company to compel another to restore to it connections which had been severed upon the making by the other of such a contract with still another company. The complainant company contended that as telephone companies are common carriers of information, it was entitled to the same connections as were given to the third company in question.

This the court held was not so because a telephone company, although a common carrier, is not bound to give another company, or its patrons, connection with its switchboard on an equality with its own patrons, such connection being a privilege to be accorded only as the result of private contract, or, in obedience to some constitutional or statutory provision. The fact that the company had granted such right to one company does not entitle others to the same privilege. So held the United States court for the Eastern District of Washington in the case of the Pacific Telephone & Telegraph Co. vs. Anderson, 196 Federal 699.

Installing Party Lines.

Where a telephone company's franchise provides that it should not install any party lines, the company is not warranted in installing them, because it charges cheaper toll rates for them and the service is approximately equal to that of direct lines. So held the court of appeals of Kentucky in an action brought by the City of Louisville against the Louisville Home Telephone Co.

The predecessor of the enfranchised company had used telephone lines which required separate signals for each subscriber and which could be heard by each subscriber. The enfranchised company installed party lines by means of which, by a special equipment, the operator might signal one subscriber without disturbing the others on the line. It was contended that the purpose of the franchise provisions were merely to prohibit old style party lines, but this the court held was not the case; that the franchise must be accepted and enforced as written. The condition prohibiting installation of party lines was held to be valid.

The court said, "We are not convinced by the record before us that the use of the harmonic, selective equipment, in connection with the operation of the party lines does, in fact, relieve some of the objectionable features attending the use of the old party line service." City of Louisville vs. Louisville Home Telephone Co., 148 Southwestern, 13.

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Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personal.

SHERBURNE DAVIS LEVINGS, who has just been made head of the heating division, detail and supply sales department of the Westinghouse Electric & Manufacturing Co., has had a wide and varied experience in the electrical field. Mr. Levings was born in Chicago, July 30, 1880. He was educated in the schools of that city and took a special course in electrical engineering in the Armour Institute of Technology, of Chicago.

S. D. Levings.

In 1904, he was connected with the Chicago Telephone Co., in the engineering department designing the outside distribution plant. He standardized construction specifications and later became assistant construction engineer for this company. He resigned this position with the Chicago Telephone Co. to take charge of the southwestern office of McMeen & Miller, electrical engineers, his headquarters being in Houston, Texas. There he designed a complete automatic plant for Houston.

Leaving the employ of McMeen & Miller, Mr. Levings associated himself with the Telephone Weekly, in New York City, of which Paul Latzke was proprietor and editor. Mr. Levings was technical editor of this publication until it was absorbed by TELEPHONY, in November, 1910.

For two years previously he served as dynamo tester and engineer of tests for the Western Electric Co., resigning that position to become electrical engineer for the Edwards Railroad Electric Light Co., manufacturing electric locomotive headlights. He left this position to engage with the Chicago Telephone Co.

The department of the Westinghouse company, of which Mr. Levings is now the head, markets household and industrial electrically heated apparatus, such as flat irons, toasters, stoves, chafing dishes, soldering irons, glue pots, etc.

Mr. Levings has displayed marked ability in every position which he has occupied and has made an enviable record for himself in various branches of the electrical field. His many friends will be glad to learn that his experience and capacity for effective work have now been recognized by a corporation of the character of the Westinghouse company.

JAS. H. DERRY has been appointed manager for the Home Telephone Co., at Tarkio, Mo., succeeding E. C. Turner.

J. S. BROOKS, local manager of the Pioneer Telephone Co., at Oklahoma City, Okla., has been made traveling auditor for the company in Oklahoma. He will be succeeded by G. J. Gasselberry, local manager of the Tulsa exchange.

E. ARTHUR DEMORSET, formerly local manager of the Allentown, Pa., offices of the Lehigh Telephone Co., and later with the Consolidated Telephone Companies of Pennsylvania, with offices in Philadelphia, has resigned from his position with the company because of ill health.

W. R. MCGOVERN, formerly engineer of the Wisconsin Telephone Co., and for the past year engineer of inventory and appraisals for the central group of Bell companies, has been appointed engineer for the state of Illinois, covering all the property of the Chicago Telephone Co. and the Central Union Telephone Co. in Illinois.

SAMUEL G. MCMEEN, president of the Columbus Railway & Light Co., Columbus, Ohio, has been appointed chairman of the committee of telegraphy and telephony, of the American Institute of Electrical Engineers, for the present administrative year. Mr. McMeen is also the senior member of the firm of McMeen & Miller, Chicago, consulting telephone engineers, and is well qualified in every respect for the chairmanship of the committee.

New Companies.

GALT, CAL.—A farmers' line telephone company has been organized to connect Herald and Lodi.

STEPHENSON, MICH.—The Lake Roadway Telephone Co. has been formed to operate in Menominee county. It will connect Longrie, Koss and other points in Lake township and will run a line into Stephenson.

MILLADORE, WIS.—The Milladore Telephone Co. has been incorporated by J. Verhulst, J. E. Malik and J. W. Cherney. Capital, $4,000.

KINSMAN, O.—The Farmers' Mutual Telephone Co. has been incorporated by W. D. Lossee and others.

MECHANICSBURG, PA.—The Givler Schoolhouse Rural Telephone Co. has been organized recently. This line extends between Mechanicsburg and the territory between Williams Grove and Churchtown. The following are the officers: J. W. Hertzler, president; William Coller, secretary; Elmer P. Brindle, treasurer.

Construction.

LOS ANGELES, CAL.—The toll line system of the United States Long Distance Telephone & Telegraph Co. between Long Beach and Los Angeles will be rebuilt, and approximately twenty new long distance lines will be added to the system.

WHITESBURG, KY.—The Whitesburg Telephone Co. is making preparations to extend its local and long distance lines along the extension of the Lexington & Eastern railroad from Whitesburg to McRoberts. Connection will also be made with Jenkins and suburbs.

SAGINAW, MICH.—The Valley Home Telephone Co. contemplates the expenditure of approximately $200,000 for the rebuilding of its Bay City plant.

FAIRVIEW, S. D.—Carl Dyvig, of Inwood, Ia., has purchased a controlling interest in the Fairview Co. The system will be improved and a direct line will be constructed to Inwood.

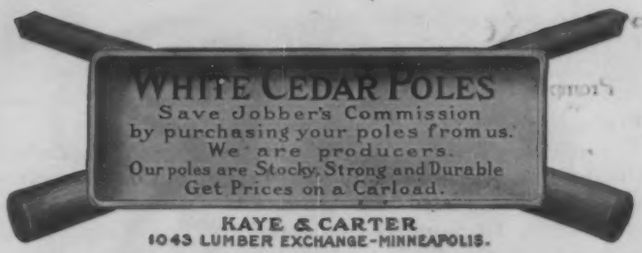
Financial.

LOUISVILLE, KY.—The Butler County Mutual Telephone Co. has increased its capital stock from $720 to $1,440.

BEAR GAP, PA.—The directors of the Bear Gap & Numidia Telephone Co. have declared a dividend of 5 per cent., an increase of 1 per cent. over the last dividend.

Franchises.

SPOKANE, WASH.—The Inland Telephone & Telegraph Co., recently incorporated, has applied for a franchise to use the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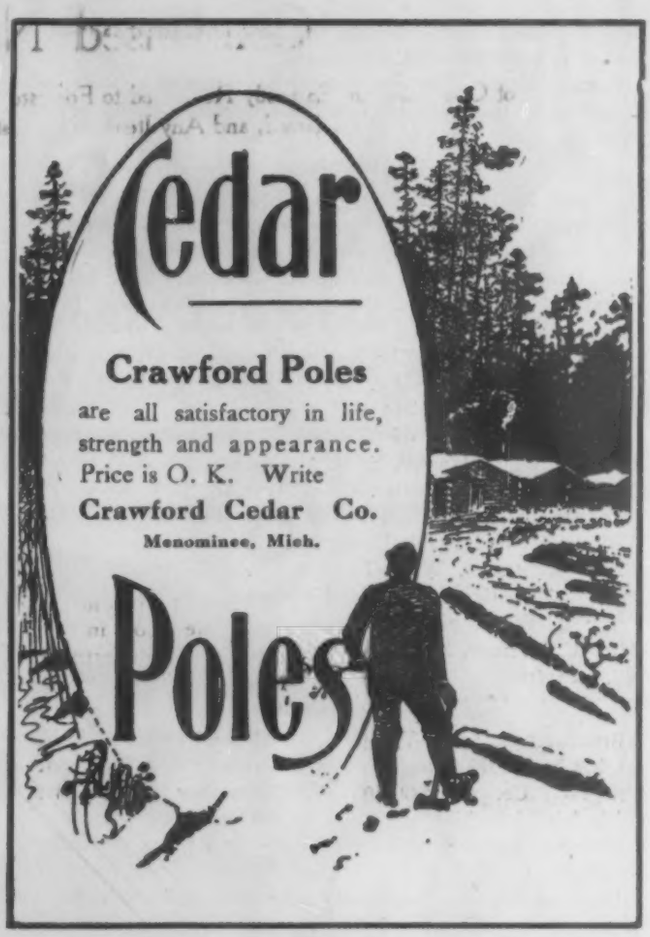

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county roads between Spokane and Lewiston, Idaho. John W. Fisher is president of the company.

KELSO, WASH.—The city council has granted a twenty-year franchise to the Granger Telephone Co., now doing business here.

Elections.

ONSTED, MICH.—Officers of the Onsted Mutual Telephone Co. have been elected for the coming year as follows: President, Fred Stoddard; vice-president, Seward B. Redfield; secretary, J. B. Daniels; treasurer, George W. Greenleaf. The board of managers includes Iona Hand, Barnard Hicks and George Hicks.

WILLIAMSPORT, PA.—The Ralston Telephone Co. has elected the following officers: Dr. W. H. Howell, president; E. M. McCracken, vice-president and treasurer; Dr. J. F. Fleming, secretary. The board of directors is composed of the following: Dr. W. M. Howell, E. M. McCracken, Dr. J. F. Fleming, S. G. Kiess, E. J. Dexter, L. L. Truman, J. J. Noon, J. F. Bidelspacher, Hudson R. Fleming, L. E. Warren, Amos Smith, William Fry and Frank Livermore.

NEW RICHMOND, WIS.—The St. Croix Telephone Co. held its annual meeting recently and elected the following officers: Frank S. Wade, president; John J. Padden, vice-president; Percy C. Harmon, secretary and manager; and H. E. Rounsavell, treasurer.

Miscellaneous.

BIRMINGHAM, ALA.—The property of the Peoples' Telephone Co. has been sold at auction to the Southern Bell Telephone & Telegraph Co. for $494,100. The company recently relinquished its franchise and went out of business.

DELIGHT, ARK.—The Delight Telephone Co. has surrendered its charter.

DELAVAN, ILL.—Arrangements have been made to merge the plants of the Citizens and Bell companies here. The Citizens takes over the Bell property.

CRAWFORDSVILLE, IND.—The Central Union Telephone Co. has bought the plant of the Home Telephone Co. in this city. The price is given as $100,000. The Home company was organized here ten or twelve years ago. The new owners announce that there will probably be an increase of fifty cents a month in telephone rates, which would make the rate $3 a month for the business telephones and $1.50 a month for residence telephones, with a possible price of $2.50 a month for a party business line and $1.25 a month for a party residence.

HAMMOND, IND.—The Chicago Telephone Co. has closed negotiations for the purchase of the Northwestern Telephone Co., of Indiana. The balloting was by shares. There were 1,100 shares on the market in 1905. The capital stock was $25,000. A deal is said to be pending also for the purchase of the Crown Point Telephone Co.

ZEELAND, MICH.—The equipment of the Citizens' Telephone Co., at Fellows Station has been purchased by the Allendale Telephone Co.

ELM CREEK, NEB.—The Elm Creek Telephone Company's system has been sold to the Nebraska Telephone Co.

WAKEFIELD, NEB.—The Northeastern Telephone Co., operating here, and at Pender, Emerson and Thurston, has come under control of the Nebraska Telephone Co. A majority of the stock ($30,000 out of a total of $45,000), was owned by E. E. Halstead, who has now transferred it to the Nebraska company.

GARDNERVILLE, NEV.—The United Farmers' Telephone and Telegraph Co. has assumed control of the Nevada Consolidated company's lines in Carson Valley.

ALBANY, N. Y.—The New York Telephone Co. has purchased the Duchess County Telephone Co., at Poughkeepsie, and the Inter-State Telephone Co., at Little Falls, N. Y.

TOBACCOVILLE, N. C.—The Dozier Telephone Co. has filed an amendment to its charter changing the name to the Pfafftown Telephone Co. and increasing the capital stock.

FREMONT, OHIO.—The Fremont Home Telephone Co. has taken over the exchange of the Central Union Telephone Co. in this city. The Fremont Home Telephone Co. will increase its capital stock from $150,000 to $200,000.

ERIE, PA.—Theodore A. Lamb has been appointed receiver of the Union Telephone Co. The company operates in Mercer and Lawrence counties. Its lines are leased by the American Union Telephone Co., of Philadelphia. The receivership is a part of a general reorganization plan.

NAZARETH, PA.—The Slate Belt Telephone Co. has closed a deal with the Patrons Telephone Co., operating in Warren county, N. J., which will afford inter-communication. This opens out a broader field for the Slate Belt organization.

PITTSBURG, PA.—The Central District & Printing Telegraph Co. has authorized $80,000 for expenditure for improvements. A large part of the money will be used for underground conduits.

SCRANTON, PA.—The Suburban Telephone Co., of this place, has planned extensive improvements to its local plant which will cost approximately $75,000.

UNIONTOWN, PA.—The court has appointed Lee Smith receiver for the Franklin Mutual Telephone Co., operating near Smock. The receiver is to sell the property and to divide the proceeds among the stockholders.

AMARILLO, TEXAS.—J. E. Nunn and associates have sold to the Southwestern Telegraph & Telephone Co. their long distance lines in the Panhandle, known as the Northwest Texas Telephone Co., the consideration being $101,000. The lines transferred connect Amarillo with Canyon, Tulia, Plainview, Lubbock, Floydada and other points.

AMARILLO, TEX.—The Panhandle Telephone & Telegraph Co. has been sold to the Southwestern Telegraph & Telephone Co.

EL PASO, TEX.—The Southern Independent Telephone Co. has retired from business and is dismantling its plant.

RIPON, WIS.—The Ripon Telephone Co. and the Ripon Rural Telephone Co. have consolidated into the Ripon United Telephone Co. The consideration for the stock in the city company was $12,500 and in the rural company $13,300. G. F. Horner was president of the Ripon company and J. B. Barlow, Jr., was president of the rural company. S. M. Pedrick was secretary for both companies.

INGERSOLL, ONT.—The Bell Telephone Co. of Canada is negotiating for the purchase of the Ingersoll Telephone Co., Ltd.

Underground.

ROCK ISLAND, ILL.—The city council has adopted a resolution asking the wire using companies in this city to remove their aerial wires on Third avenue from Fifteenth to Twenty-Fourth streets, and to place them in underground conduits. The work must be done before the street is paved.

HOUGHTON, MICH.—The Michigan State Telephone Co. is preparing to bury its wires on Shedden street.

BEVERLY, N. J.—The council has begun an agitation designed to force underground all telephone and telegraph wires here.

CHESTER, PA.—Within a short time the Bell Telephone Co. of Pennsylvania will begin the work of placing its wires underground along Baltimore avenue, in this city. Over 10,000 feet of underground conduit will be laid, with about twenty manholes.

AUSTIN, TEXAS.—The city attorney has recommended to the council that the United Telephone Co. be required to place its wires underground in this city. The recommendation applies at this time to one street only. The company declares it is not in position financially to do the work generally.

KNOXVILLE, TENN.—The Cumberland Telephone & Telegraph Co. will place its wires underground in this city.

WAUSAU, WIS.—The Wausau Telephone Co. contemplates the extension of its underground system.